THE BUILDER

A RECORD OF ARCHITECTURE AND CONSTRUCTION.

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AN ARCHITECT'S OBJECTIVE.

MANKIND may be divided into three sections—those who have a clearly-defined purpose, which they work for consistently and continuously; those who think they are doing so, but who act spasmodically and without method; and, lastly, those who allow themselves to become the creatures of the immediate present, and who live and work without a definite aim.

In commercial life a man's objective is usually clearly defined, and may be described as the acquisition of wealth or the manufacture of a commodity which is required consistently with making a profit in the process. In pure science men strive to attain knowledge; in applied science to put it to some commercial use. In literature the objective is the production of what is useful, beautiful, or entertaining to mankind, in more or less accordance with certain recognised standards. In music it is the arrangement of harmonies or discords which produce certain effects of emotion or pleasure. But when we come to the three arts of painting, sculpture, and architecture, the artist's objective is less easy to define, more especially in the case of architecture, in the production of which, as we shall show, a number of contrary and conflicting conditions come into play, the architect being frequently confronted with a most difficult dilemma.

The painter's and sculptor's position are simpler. As a rule it may be stated that the creation of a masterpiece does not involve a greater cost than does the failure of a tyro. The same block of marble or stone and the same range of colours would serve a modern Velasquez or Phidias and the student of an art school. Except in the school of portraiture, pictures are usually executed before they are sold, and no practical limitation binds the artist in his choice of subject. Painters complain of having to execute "pot-boilers," but no artist who has sufficient genius need do so long, because the same square of canvas and the same colours will suffice for a masterpiece or a daub, and a modern Velasquez would soon "command his market." With sculpture the case is a little more difficult, because in England there is less demand for it, and the actual cost of material for large work is considerable, while the space it occupies imposes a further limitation. Still it is more practicable for the genius who is a sculptor or painter to secure the recognition he deserves than it is for the architect placed in a similar position, since personal labour only is required, and no practical considerations impose boundaries on creative effort.

Architecture, on the other hand, is conterminous with the practical, utilitarian things of life at every point. If mankind had no need of shelter or accommodation, architecture would never have arisen, while both painting and sculpture might have held their present position.

Unlike the other arts, architecture primarily rests on a utilitarian basis; unlike them, its actual production involves the expenditure of large sums of money. The architect who can create palaces may, through force of circumstances, be compelled to spend his life in designing cottages or utilitarian buildings, and, though we can form some idea of his capabilities by what he is able to do in a humble capacity, even men with special knowledge can hardly do so to the extent to which they may be able to judge the work of painter and sculptor, because the satisfaction of utilitarian demands in smaller buildings frequently affords little scope for anything else.

Then, again, the patron of painting or sculpture loves art, or thinks he loves it; the architect's client, in the great majority of cases, merely looks on his architect as the necessary medium through whom he can satisfy some utilitarian requirement. The architect is therefore employed, not as an artist, but as a director of certain practical operations. It will be said that there are many lovers of architecture, just as there are many who devote their leisure to the study of other arts, but reflection will convince us that with a few exceptions painting and sculpture are better understood by the public than architecture. Also no man builds for artistic considerations alone; while all who expend money in the other arts have few other objects in doing so. From what we have said it follows that the architect is usually consulted and employed for reasons apart from any question of art. But the man of ability wishes to produce architecture as well as to scheme out accommodation, and it is true that in a great majority of instances he is serving two masters—one the client, whose practical requirements he is called to satisfy, and the other his own artistic desires. While discussing the one with his client he is usually thinking how he can gratify desires and aspirations which in many cases it would be unwise even to mention to his client. When discussing the provision of a bedroom, for instance, he is probably thinking of the manner in which it may affect the appearance of a balustrade, which is essential for his æsthetic conception. He will often veto a client's suggestions, not because they are impracticable, but because they hamper the evolution of a scheme which he does not mention. There are many cases in which an architect would be most unwilling to let his client know the cost of some item in a design, because, though necessary from an æsthetic standpoint, its omission is practicable from a utilitarian one, and in such instances only his client's ignorance saves the situation. We may be accused of representing the architect as one who plays an insincere *rôle*, but this is far from our intention. His desire to be true to his artistic aspirations is at least as praiseworthy as a determination to act as his employer's paid agent. In very many cases he knows he will get little thanks and much criticism for what he attempts in the cause of art; while he is certain to deserve commendation and perhaps secure more work by acting merely as a paid agent. We believe, again, that many architects are so used to the difficult *rôle* they play that they do not realise that they are throughout life acting in a dual capacity, and further that the recognition of the fact should be a help and not a hindrance to success.

Nearly all that we really effect in our lives is the outcome of sound compromise, and those who wish to work rather than to theorise are wise if they make up their minds how and to what degree they should compromise. The architect who secures an ignorant client, and gives him what he does not understand or like, simply because he does not realise the meaning of drawings or building, is practically using the money of another as if it were his own, and is helping to give architects a name for being unpractical and useless. On the other hand, the architect who is obedient to every whim of a client allows knowledge and skill to be the plaything of ignorance. Architects should treat the art of architecture with reverence, but as practical men who wish to do work as well as dream dreams they are compelled to give reasonable satisfaction to those who employ them.

But it is wiser not to assume that there is agreement where fundamentally none is possible, and in every case it would be well for the architect to define clearly in his own mind what he wants and what his client wants, and attempt to make the best compromise which can be effected.

We are convinced that architects would make greater headway with the public if they were more interested in the psychological difference lying between the client's attitude and their own, for it is fundamental rather than accidental, like the sex antagonism which undoubtedly underlies the relations between man and woman. We recognise the one, and the recognition brings us actually nearer in sympathy, for it explains much which would otherwise irritate, and we

claim that similar clarity of vision would frequently help the architect in dealing with his clients. The man whose own views of art are dogmas becomes an intolerable bore, however able he may be; while the man who is interested in the mental processes of others often finds a bridge over which he can pass to the accomplishment of his desires.

We may hope for a better public understanding of architecture in the future which will bring the desires of layman and architect more in harmony with one another; but we must not, because we have our eyes fixed on the stars of a future heaven, forget the stones which lie at our feet, for we shall assuredly be tripped up by them if we do.

NOTES.

Architectural Competitions.

MR. H. V. LANCHESTER read an interesting paper at the R.I.B.A. on Monday on "The Evolution of the Architectural Competition," which was very well received and much appreciated by a well-attended meeting, and all speakers showed the evident pleasure which they had derived from the lucid and clear presentment of the difficulties of competition and the methods by which those difficulties might be best overcome. The paper was rather philosophic than controversial, and in the subsequent discussion the same note was adhered to by every speaker—a marked change from the hard hitting which usually takes place on the discussion of specific awards. We think the elimination of small competitions for buildings costing a few thousand pounds is one of the practical points which might have been raised, as such competition is not consistent with the dignity of a great profession. The history of competitions has been a chequered one, and when other controversies are stilled we shall yet expect to hear discussions of the merits of the most recent award. We think Mr. Lanchester hardly gave sufficient emphasis to that all-important necessity—that the assessor should possess judicial instinct, as without it no award can be soundly made, and by its exercise in most cases an assessor's work is greatly lightened, as it directs his attention to the limited field in which only a just decision can be made. The doubts felt by assessors are largely of their own making, arising from the difficulty found by them in adapting themselves to the exercise of an unusual function. If our judges spent half their time as advocates we doubt if their decisions would command the respect which they deservedly earn.

Brussels.

BRUSSELS is the subject of the two final lectures held under the auspices of the Carpenters' Company at University College, Mr. Patrick Abercrombie being the lecturer. He devoted the first, given on May 13, to a consideration of the town in the Middle Ages. In his preliminary remarks he mentioned that in Belgium already in Feudal times the Government was of a very democratic nature, far in advance of most other nations, who undoubtedly owed Flanders a considerable debt in this respect. The town grew round the stronghold, but if the people did not approve of the Overlord it was he who had to leave and not the people. Brussels in the fourteenth century already rivalled Bruges and Ypres in importance, and retained its prosperity, as it was a roadside town, though with subsidiary canals. It is on the main thoroughfare to France and Germany, and just as the roads accounted for its importance in those days so the railway system, of which it is the centre, has done in modern times, quite apart from the fact that it is the capital. The first fortifications were constructed in the twelfth century, and were reconstructed in the fifteenth. Later, the Renaissance bastions were added to the mediæval works. In contrast to other mediæval towns, the whole population did not live within the walls, the houses of the working classes being outside. The chief buildings in the centre of the town were the factories and houses of the principal merchants. By the fifteenth century Brussels was as large a town as Paris at the same date. Mr. Abercrombie explained the fact that the most important and richest buildings in Flemish towns were often erected not at the height of their prosperity, but during their decline, by the desire of the princes of the Burgundy *régime* to outshine each other. The lecturer showed a number of exceedingly interesting slides, mainly illustrating the Grand Place at various dates. The Town Hall, the main building in the square—which as a matter of fact is quite irregular in shape—was completed in 1455. The Guild Houses forming the surroundings were then wooden buildings, and the whole square suffered very considerable damage during the bombardment by Villeroy in 1695. Five years later, however, it had already been rebuilt, owing to the pride the Bruxellois felt in their Grand Place, but the reconstruction was not quite as careful as it might have been. One of the late mayors, who died shortly before the present war, had expended great energy in getting these buildings put into their original form, a task which he accomplished very successfully.

Public Baths and Cinematographs.

A RECENT judgment of the Master of the Rolls settles an interesting and not unimportant question as to the purposes for which a public bath may legally be used during the winter season. The Shoreditch Borough Council had let the large hall of the Hoxton Baths for a cinematograph entertainment. A declaration was sought and obtained that such action was not authorised by law. The decision of the court below has now been confirmed by the Court of Appeal. Among the various points raised as to the proper interpretation of the Baths and Washhouses Act of 1878, and of the Amending Act of 1896, was one which seems to have considerable architectural interest. The Act appears to have provided that any swimming bath might be used during the winter months "as an empty building" for any purpose of healthful recreation or exercise. The Master of the Rolls in his judgment said:—"The only thing that the Council could do was to allow the bath to be used as an empty building. They had not done anything of the kind. They had put up in the building an operating-box, which was a solid cement structure." His lordship did not think that in any fair sense of the word that was allowing the bath to be used as an empty building. Some definite guidance as to what was, as well as to what was not, the fair sense of the words "empty building" would have been valuable. Failing this, the lay mind might perhaps reasonably infer that the building must be used as it stands, and that no alterations or additions of a structural or permanent nature are permissible to render it more suitable for letting. We hope, in the interests of expressive architecture, that this is the meaning of the judgment, for it is obvious that the addition of "solid cement structures" of one sort and another destroys the architectural value and character of a building. Also it should be remembered that such addition must tend to lessen its efficiency and to render it less suitable for its original purpose—surely an argument that should appeal to our local authorities. The secret of it is that these same authorities are forced to carry economy to the verge of meanness in dealing with buildings of this nature. The desire to produce a revenue during the winter months is allowed to override all other considerations. Now that profitable opportunities must be refused for lack of power to make the necessary alterations, we may expect to see other expedients adopted in the interests of municipal economy. If public baths may not be altered to suit every form of entertainment that appears to have achieved permanent popularity there is no reason, it may be argued, why they should not be built to suit them. If accommodation not strictly required for a swimming bath may be included in the original design so that the building may be let for some secondary purpose—why not for one purpose as well as for another? If an extra cloakroom or entrance is permissible for the purposes of a public hall, why not an operating-box for the purpose of a cinematograph performance? On this line of argument there is no limit to the number of extraneous features that may be introduced into the public baths of the future, so that they may be let as "empty buildings" for all sorts of purposes—much to the relief of the rates, but greatly to the detriment of architecture. It would be interesting to hear the opinion of the courts on this point. Perhaps some of our readers can tell us also whether the Act definitely permits additional expenditure in bath buildings for purposes other than those of a bath, and whether it contemplated the loss of efficiency for the primary purpose of the building that must arise from any modification of its arrangements to suit the secondary purposes referred to in the Act.

Leipzig Fair in London.

THE British Industries Fair now being held at the Agricultural Hall, Islington, appears to have opened well, and with every prospect of proving a great success. Organised by the Board of Trade as a challenge to the position hitherto occupied by Leipzig Fair, the new Fair of London covers the same ground. Glass, china, and earthenware, cutlery and jewellery, clocks, fancy goods, stationery and toys are some of the manufactures displayed. Already a considerable amount of business has been transacted. One firm, we are told, did £30,000 worth of business on the opening day alone, while another opened 400 new accounts for an article hitherto exclusively made in Germany. It is especially interesting to learn that much of this demand is from our overseas Dominions and from the principal European countries other than the Germanic ones. There seems every reason to hope that the success of the Fair may prove permanent, and that a large proportion of the forty odd millions of trade hitherto transacted by Leipzig each year may in the future be transacted by London. The Board of Trade is to be congratulated on the efficient manner in which it has organised a movement which may prove of incalculable benefit to the commerce of the Empire. The wonder of every foreigner visiting this country for the first time is the unrivalled position which it holds for purposes of production by reason of its abundant waterways, the juxtaposition of good coal and iron, and the fertility of its soil. The reconstruction of the canal system is necessary for the cheap transport of goods; other necessities are an increased alertness on the part of manufacturers to seize opportunities open to them. and the adoption of means for preventing industrial unrest.

CONTRACTORS AND QUANTITIES.

BY A QUANTITY SURVEYOR.

THE case for the architect preparing his own quantities which appeared in your issue of April 30 was, in my opinion, a piece of special pleading at the best, and has produced the inevitable storm of protests, both from surveyors and builders, just as it did when a similar claim was put forward in your columns about two years ago. On that occasion it was pointed out in your leader that the preparation of a thoroughly good bill of quantities demanded several qualities in the person responsible for it, which, if possessed by architects, are usually rather a drawback to them than an asset. These include great power of concentration on small details, a fine memory for figures, a logical and orderly faculty for arranging data, and a brain more adapted as a reservoir for facts than as a generator of ideas. It was also said that the training of a surveyor in method and routine and the details of the various trade customs are not things which can be picked up haphazard, and therefore it is difficult for one man to perform both functions satisfactorily. Such a man would either be a good surveyor and a bad architect or *vice versâ*.

If architecture were uppermost, as it should be, the quantities would have to be deputed; but even here the architect is at a disadvantage, as he cannot command the best men to assist him, nor can he organise his office in the same thorough and economical way in which a surveyor can, and is therefore handicapped severely at the outset.

This involves charging higher fees, so that the standard of efficiency is often in inverse ratio to the percentage of fees charged.

There are no wise Remuneration Acts to regulate these fees as there are with lawyers, and therefore the customary maximum is charged regardless of the value of the services rendered.

As things are no one can dispute the right of an architect to prepare his own quantities, nor can one truthfully say that it is impossible for him to produce good ones, though he rarely does so; but the arguments of "A London Quantity Surveyor" and Mr. A. G. White, Secretary of the National Federation of Building Trades Employers, given in your issue of May 7, and of Mr. George Corderoy on May 14, should have convinced any fair-minded person that the best interests of employers are served by the employment of an independent surveyor. This is gradually becoming known to public bodies, but not so widely to private individuals, who do not discover their mistake until the accounts come in. In time, however, it is to be hoped their advisers, the solicitors, will realise it and put them in the right way.

Quantity surveyors are in a somewhat similar case to that of barristers. Neither is employed directly by the client, but by his architect or solicitor, as the case may be; but the barrister is protected by ancient traditions and the sanctity which guards the learned professions, whereas the surveyor has no such safeguards, and therefore his position can be usurped by any unqualified persons. This state of things will probably continue until the surveyors are able to establish themselves as a closed profession or by some legal sanction, as they have in Scotland, where they are ordained. The builders can assist them materially in this object by refusing to tender on architects' quantities unless they are made a part of the contract. According to Mr. White this is becoming the regular practice in the provinces, and will no doubt increase.

It puts matters on a better footing so far as efficient work is concerned, although even there an adequate margin in the builder's favour will usually make things run quite smoothly. What is wanted is some test by which the worth of a bill of quantities may be gauged. The bill itself is usually a fair indication, but is not sufficient by itself. It only shows whether due discrimination has been exercised as to the different categories of the materials and workmanship, but does not show the system by which the results are obtained. Upon this will depend the possibility of easy and rapid adjustment in case of variation. Also the extent to which an estimator dare discount the bill in pricing. The true index of reliability is to be found in the name on the back of the bill. On a good surveyor's bill, which can be safely considered to be an accurate statement of the facts, a contractor can estimate with certainty and cut his price with safety, while on one which is manifestly bad, but obviously safe from his point of view, and known to cover the benefit of all doubts that have arisen, he can discount his price to allow for these, but only with risk, lest there should be omissions more than enough to counterbalance the excesses. It is a lottery, and he may win or lose heavily. Builders could no doubt unfold an illuminating story of their experiences (but for the breach of confidence involved by so doing), which would do more to clear the air than anything. A contractor's risks are already very great—the labour market and the difficulties of transport, accidents, the risks of faulty construction being overlooked by his staff, and his insistent liability for any failures that may occur whatever the architect may do—all make contracting a very speculative business, and few are those who have made large and continuous profits at it. Many contractors on that account are driven to the higher class of speculative building which is becoming the vogue of to-day. Large City and West-end buildings with heavy ground rents are being erected by contractors at their own risk, and, risky as they are, the profits are less doubtful than if they erected them for others on a contract under existing conditions, owing partly to competition and partly to difficulties in estimating.

Thomas Brassey, the great contractor, who carried out contracts in all parts of the world to the extent of seventy millions, told his biographer that he had made very large profits in some cases, but also in others very great losses through storms, floods, labour difficulties, and other causes, and that the net result of all his contracts was only a profit of 1½ per cent.

Added to all these risks contractors cannot afford to have another serious risk such as that involved by signing an unprotected contract on the basis of inefficiently-prepared quantities, especially when he knows that by a wise selection among his invitations to tender it can be avoided.

The contractors' attitude is unmistakable. Mr. A. G. White has stated it most emphatically, and the official statement "that the National Federation of Building Trades Employers is strongly of opinion that all quantities for building work should be taken out by a qualified quantity surveyor, and has long maintained the view that the taking out of quantities by architects is a mistake and leads to inconvenience," should put an end to this question. Surveyors will know the truth of it and appreciate the frank statement of it. It seems that the days of the amateur are over, and there can be no compromise on a question of this kind. Even if such practices might have been tolerated in the loose and careless days before the war, it is very unlikely that any counterfeit presentments of quantities or anything else will be accepted and paid for in the strenuous days before us.

The same demand for reliable work as that which has emanated from the Government and London County Council and other public bodies, that a copy of the dimensions shall be supplied to them and that there shall be a restricted kind of guarantee of substantial accuracy from the surveyor, will in time permeate the whole practice of quantity surveying, and, although there may be great differences of opinion as to the fairness of guarantees, there will have to be something to fix the responsibility.

At present in the case which usually occurs there is none, as the surveyor is under no liability to the contractor for his errors, there being no priority of contract between them, nor to the building owner unless it can be proved that there are gross excesses in the quantities caused by negligence or fraud, so that his interests have suffered. As most errors are due to shortages and not excesses, he usually escapes. While admitting, then, that guarantees exceed reasonable liability and impose a greater responsibility upon practitioners than any other profession has to bear, it is equally unreasonable that there should be no liability at all, or such a limited one as I have described. It is only because contractors know by experience the high level of proficiency maintained by the leading surveyors that they accept their figures without attempting to check them, and without insisting on their being incorporated in the contract.

The logical alternative for them would be to insist on having a voice in the selection of the surveyor, and only to agree to such surveyors as subscribed to a guarantee or insurance fund for the purpose of meeting legitimate claims by contractors, which would have to be adjudicated by a Committee appointed from time to time.

If such a system ever did become established as a result of a stand by the contractors, there would have to be some agreed percentage allowed for errors, varying according to the size of the contract, as no surveyor could be expected to be absolutely accurate in every detail, but only substantially accurate—that is to say, that slight omissions might be balanced by slight excesses, so that the balance is within from 1 to 2 per cent. of the total, as might be agreed.

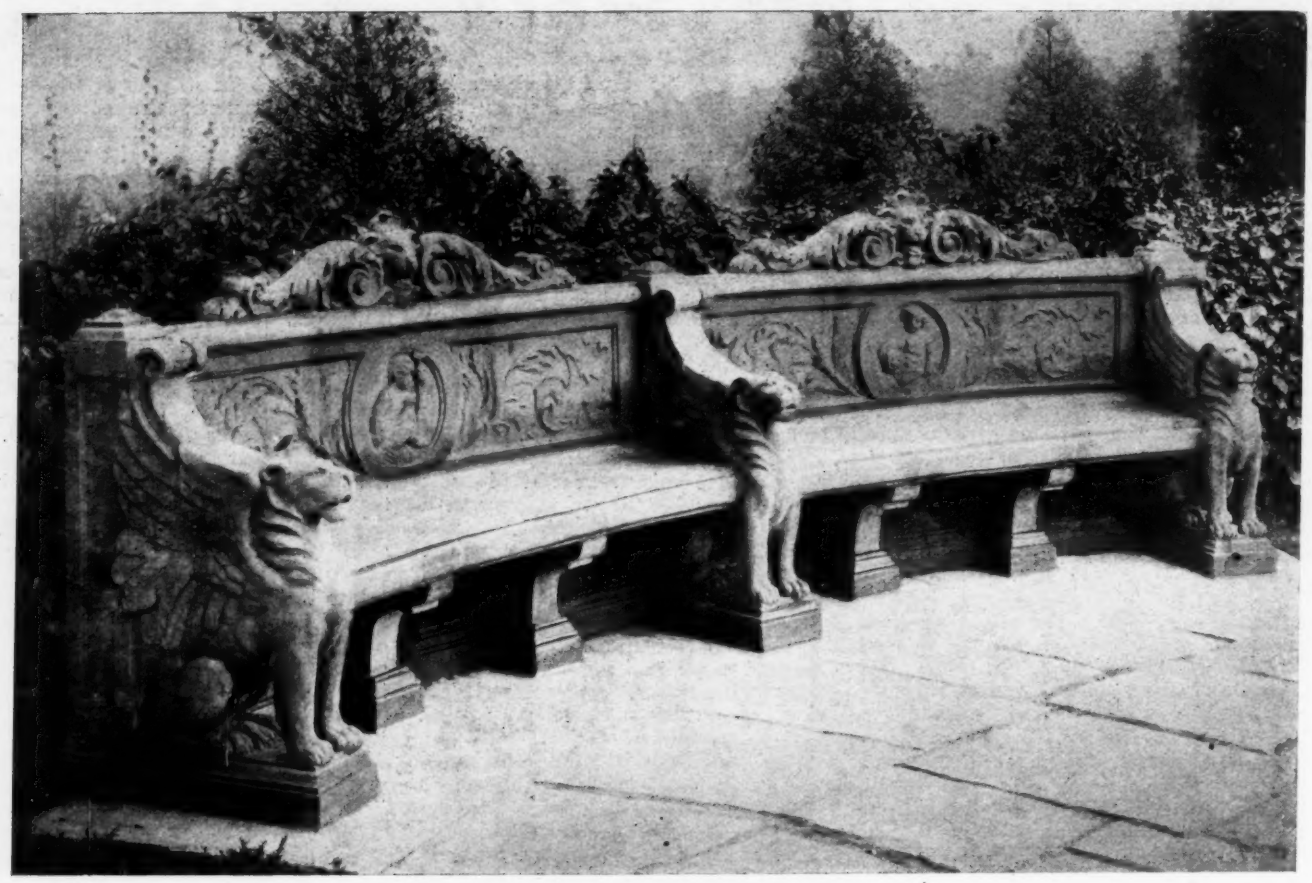
Some might say that such a system would give rise to a litigious and vexatious attitude by the contractors on a settlement of accounts. That is possible, but easily met by a competent and firm attitude by the surveyor.

Upon the production of a series of claims exceeding in total the agreed percentage, the contractor should be asked whether he challenges the quantities as a whole. If not, then, supposing his claims are valid and no obvious set-offs are discovered, he should be offered the alternative of accepting the amount provided by the margin for errors or a remeasurement of the whole of the work. He usually knows whether the result would justify such a course, though sometimes he may not. In one case which came within my experience the contractor persisted in demanding entire remeasurement and deposited the amount of the surveyor's fees for remeasurement as security in case of an adverse result, only to find that, instead of justifying his claims, he had to submit to a deduction and pay the fees in addition.

In all human handiwork there is the personal equation to consider, and no doubt no two surveyors would produce the same bill of quantities for the same building. The experiment has been tried within my own knowledge, and the differences were substantial, but contractors feel generally that this tendency to error or to differences in practice and manner of presentation is reduced to a minimum with the best London surveyors, and it is a great compliment to them that he is ready to go through such vast undertakings on their quantities.

But should it be felt that the general level of their work deteriorates, or that architects intervene with their own quantities to a greater extent than they think desirable, they have it in their power to demand any of these suggestions or others of their own devised for the same object, viz., that of ensuring reliable quantities. The ball is at their feet and they must keep it there.

[*** Our contention is that a great number of architects are well qualified for taking out quantities, and that the architect who takes out his own quantities is more likely to know where economies can be effected than one who does not.—ED.]



Norbiton Garden Seat.
By Messrs. Pulham & Son.

GARDEN SCULPTURE.—I.:
IN RELATION TO PERGOLAS, VERANDAHS, TERRACE WALKS AND GARDENS, STATUES, VASES, SUNDIALS, AND GARDEN SEATS.

By SELWYN BRINTON.

ONE of the most delightful and, in its way, encouraging features of life in modern England is the increased interest in gardens and gardening that has appeared in the last ten years; and in connecting as I do in the title to this notice the two words garden and sculpture one can only wish that the same revived interest were as strongly apparent in the work of the sculptor's art.

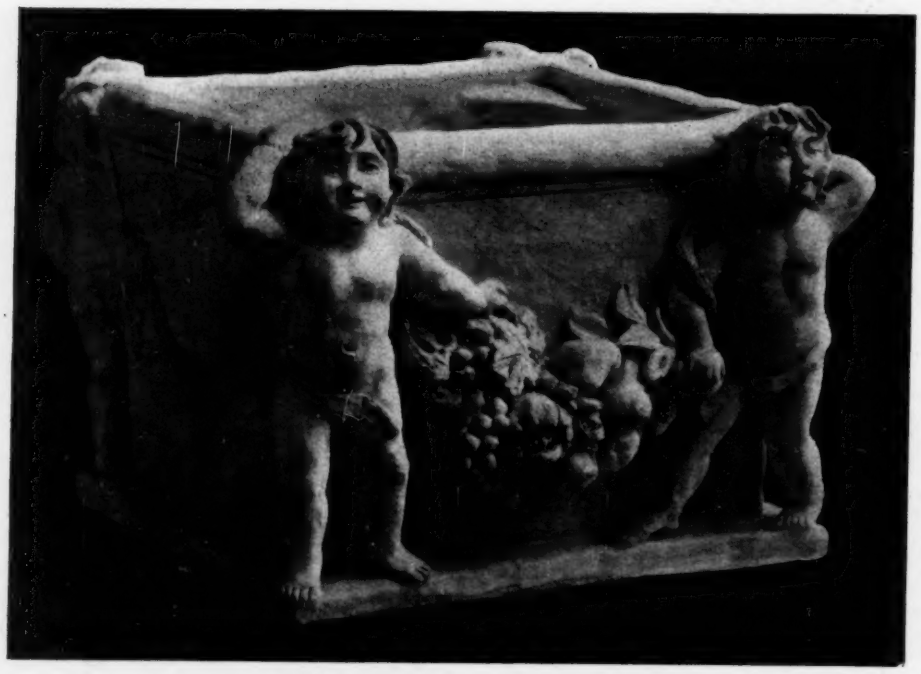
Sculpture must always make its appeal to a limited public, to those who have felt the strong attraction of form; but with us the buying public for either groups or single figures is very limited, and even in pleading—as I have done within the last twelve months in these columns—for a larger public appreciation of decorative and monumental sculpture, that appeal leaves aside other bypaths of the sculptor's craft which might be effectively employed and better placed in the public view.

Such a bypath is this of garden sculpture, and it is my wish within the limits of this notice to offer some suggestions in which I feel a very personal interest—since both the garden and the modelling-tool are special hobbies of my own—as to how the sculptor's craft can be employed, even in smaller gardens, judiciously, effectively, and at a moderate expense.

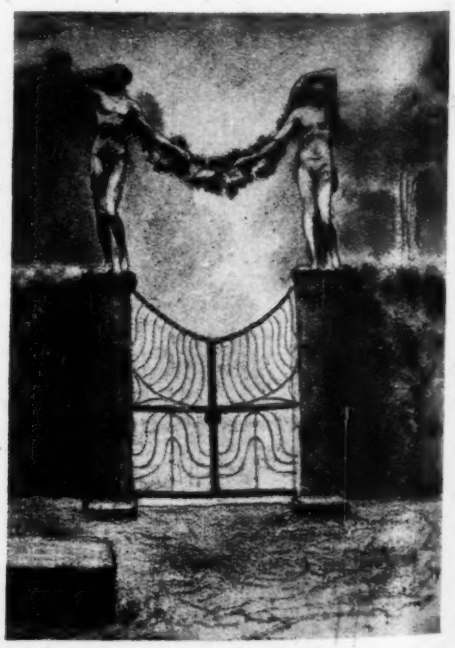
Sculpture in the garden, as much as sculpture in relation to architecture, must be always decorative and employed in just relation to its surroundings; if it once gets away from this law and asserts itself independently it becomes either an eyesore or at least a note of discord in the repose which every garden should suggest.

Having established this point, we might, for our own convenience, divide garden sculpture into what I will call direct and indirect; that which, though in harmony with its surroundings, claims a place of independent and self-existent beauty, and the indirect which is subordinated more or less to some object of pleasure or of material utility.

In the first class would come statues, whether of marble, lead, or stone, set within the garden itself or under the shelter of some verandah or covered colonnade.



Garden Vase in Terra-Cotta.
By Mrs. Adrian Hope.



Garden Gateway: from the Charcoal Study.
By M. A. Pogliani, of Rome.

The verandah is not, to my regret, used as generally with us as it is in America or some of our British Colonies, but it is by no means passed over, and where it exists forms a delightful *locale* for some marble or bronze figure or even group backed up (as may be done, too, so effectively in the conservatory) by fresh delicious greenery.

In the garden itself, as was done so frequently by the Venetians of the eighteenth century in their villas upon the Brenta, the statue can be brought in at the end of some long vista or forming the finial to a pergola, such as we are now beginning to introduce and appreciate. "When a pergola," says Mr. Mawson in his valuable work on "The Art and Craft of Garden Making," "is taken completely round the four sides of a formal garden, with some architectural feature such as a fountain or statue to mark the centre, a delightfully cloistered effect is obtained with the maximum of seclusion. Among unlovely surroundings, as, for instance, in a manufacturing district, this arrangement is particularly useful."

Naturally, too, such statuary will be best—though by no means tied down to shepherds or shepherdesses, to wood-nymphs, satyrs, or fauns—if its subject suggest the sylvan or pastoral element.

In this connection the acrolith, or single column, must not be forgotten, a feature which has been introduced so freely in the beautiful public gardens of the Pincian Hill at Rome, and which is best indeed in the somewhat severe surroundings of a typical Italian garden.

But I want to point out that in far simpler and more modest ways sculpture, either purely decorative or including the figure, can be effectively introduced. First among these I will place the sundial, because it affords most delightful opportunities for decorative treatment, and is itself in harmony with the typical English garden which I have here in view.

Tea House, with Terrace Approach.
By Messrs. Pulham & Son.

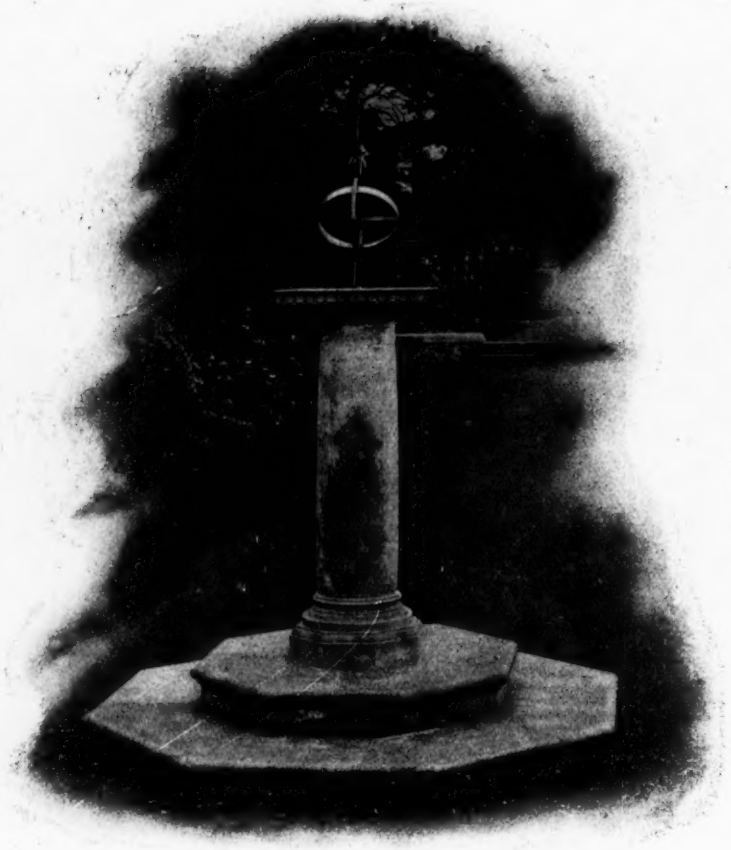
I am in entire sympathy with the author of that charmingly expressed and inspiring work, "Garden Craft, Old and New," the late John D. Sedding:—"The very enclosure of our garden spaces," he writes, "signifies that Nature is held in duress here. . . . In making a garden you start with the assumption that something must be sacrificed of wild nature and something must be superadded, and that which is superadded is not properly of this real visible world, but of the world of man's brain. . . . In a garden Nature is not to be her simple self, but is to be subject to man's conditions, his choice, his rejection. . . . It is man's report of earth at her best. It is earth emancipated from the commonplace. Earth become man's intimate possession."

The sundial admits of varied and very decorative treatment, mainly, of course, in connection with the base, though the dial itself has its own element of attractiveness. I give here two examples of simple treatment where the base is a plain column surmounted by a capital to hold the dial plate, and again where it is treated more elaborately with a beautiful pattern of leaves and flowers entwined—both these designed for Messrs. Pulham, of Broxbourne and London. There is, in fact, no limit to the possibilities of treating the sundial and its base decoratively, and these possibilities have yet been very slightly employed.

A subject of no less interest at this stage of our inquiry is that of vases or urns, which are intended to hold flowers or in some cases small trees, and may stand alone or form part of a terrace walk. By the kindness of Mrs. Adrian Hope, of Chelsea, I am able to give an illustration of a very charming design of her own where the figure has been introduced with good effect; and in this connection the artificial stone prepared by Messrs. Pulham & Son, and called by them the Pulhamite, may be mentioned as a material especially adapted for the treatment of vases.

I shall speak of leadwork more in detail in the second part of this notice, in its connection with water, with which, as a means of carriage, it has always been so closely connected; but it is only fair to mention here the lead and stone vases and urns produced by the Bromsgrove Guild, many of which are excellent in design and based on very good models. In entire figures in lead—which form a very fascinating side of art in such old gardens as those of Hardwick Hall, Castle Hill, and Nun

The Lindley Vase.
By Messrs. Pulham & Son.



"Walmer" Sundial.

By Messrs. Pulham & Son.

Monkton—the Bromsgrove Guild has been no less successful, and the figures at Barnet Court and elsewhere are in the best tradition of this art.

Vases may be effectively introduced at regular intervals along a terrace walk or as finials to a balustrade; and here I am permitted, by the kindness of the artist, that talented Roman sculptress, Maria Antonietta Pogliani, to reproduce her fine design for a garden gateway, which would be appropriate and effective in some beautiful Italian garden.

Leaving the decorative treatment of water for a later notice, I take last in this part of my subject the design of garden seats. Wooden seats, which are, of course, both useful and appropriate, especially when oak is the wood selected, are outside of my subject here, but the decorative treatment of garden seats in stone and terra-cotta (cast-iron is not to be commended) is quite practical and effective; and I give here two examples, one of which I found last spring in my hotel grounds at S. Margherita on the Ligurian coast, and induced a friend of mine there, M. Noton, to illustrate by his photograph of it; the other, from Mr. Pulham's design, being very similar in character and no less finely modelled.

All these beautiful decorative elements the reader will see belong rather to the old English garden with its quaint severity than to the landscape garden which "the immortal Brown" and his followers in the eighteenth century sought to introduce into England. Indeed we may conclude here that in the true garden man's invention fully claims its place, subordinated always to Nature's beauty, Nature's law, and that thus our task is far from being easy; but, as old Bacon wrote:—"Men come to build stately sooner than to garden finely."

Sundial with Square Base.

THE CHANTREY BEQUEST, ROYAL ACADEMY.

The President and Council of the Royal Academy have chosen the following works for purchase under the terms of the Chantrey Bequest:—"The Bather," sculptured in marble by Mr. Albert Toft and illustrated in our Royal Academy Number of May 7; "A Secret" (oil painting), by Mr. Fred Appleyard; and "A Vision of the Sea" (oil painting), by Mr. Mark Fisher, A.R.A.

HOUSING SCHEME, NEWCASTLE-ON-TYNE.

At a meeting of the Newcastle City Council the discussion was resumed of the proposal to erect 688 dwellings of various types on its estate at Walker, the cost being £117,000, and the estimates showing a small surplus. Arguments in favour were the house famine in Newcastle and the desirability of developing the estate with good-class dwellings, while the labour members held that the scheme would facilitate the provision of homes for munition workers coming to the city. The scheme was carried by thirty-one votes to eighteen.

AN ordinary general meeting of the Royal Institute of British Architects was held on Monday at No. 9, Conduit-street, Regent-street, W., Mr. Ernest Newton, A.R.A., President, in the chair.

The Hon. Secretary announced the death of an Associate of the Institute, Mr. Albert Edward Lowes, who was serving in the Army Service Corps attached to the 6th Northumberland Fusiliers, and was killed while carrying out his duties in the action near Saint-Julien on April 26. He also announced the death of another Associate, Capt. George Edward Hunter, of the 6th Northumberland Fusiliers, who lost his life in the same action, together with his younger brother, Capt. Howard Tomlin Hunter. These young officers were the only sons of Mr. and Mrs. Edward Hunter, of Wentworth, Gosforth. He also announced the death of William Leonard Boghurst Leech, who was only elected Associate as recently as last December. Mr. Leech was wounded in the fight for Hill 60, was invalided home, and died at the Emergency Hospital, Westcliff.

It was agreed that the deep regrets of the Institute for the loss of these brave young men who have given their lives for their country be entered on the minutes of the meeting, and that a message of sympathy and condolence be conveyed to the relatives.

The Hon. Secretary further announced the decease of the following members:—William Thomas Grewcock, Associate, elected 1896; Daniel Powell, Licentiate; and John Joseph Seanor.

ARCHITECTURAL COMPETITIONS.

Mr. H. V. Lanchester then read a paper on "The Evolution of the Architectural Competition," in the course of which he said:—

"The subject of my paper has such an important bearing on the practice of the art of

Garden Seat in Terra-Cotta: at Santa Margherita, Ligure. (*See p.* 482.)

architecture, that a sketch of the gradual development of the method by which competitions are conducted will possess an interest to many, not so much for its own technicalities as for the possibilities it affords for the advancement of an art which we may take a just pride in practising. Though there be some among us who feel a doubt as to the beneficial influence of the competition on design, I trust that by a closer study of the question, such as I shall advocate this evening, these doubts may be dispelled. It is not, however, my purpose to deal at length with the proposition as to whether, either under existing or under ideal conditions, the best architectural standard would be reached by means of competitions or otherwise, but rather to devote myself to the history of the competition, leading up from the first rudimentary efforts in this line to those of our own day which exhibit the most systematic organisation. This review, supplemented by a few remarks on the special advantages and difficulties the architectural competition presents, will, I imagine, enable each to form his own opinion as to how far the merits of the competitive method advance the art we practise, and how far its demerits are inherent or are merely the result of defects in procedure It would be idle for me to pretend that my own views are not decided and definite, but it will be my endeavour to let the facts speak for themselves, so that deductions rather than dogmas lead to the conclusions you may arrive at. I will briefly sketch the competitive activities recorded in architectural annals.

I have found no definite record of an architectural competition in Greece or Rome, but the principle was one so familiar to these peoples that I should be greatly surprised if none such took place. For example, the four sculptors—Leochares, Bryaxes, Scopas, and Praxiteles—were employed to decorate each of the four façades of the Mausoleum, and the public were thus able to compare their work (Vitruvius).

In Leader Scott's work on the Comacine Guilds we find that mediæval competitions arose under rather favourable circumstances, as the members of the Guild were naturally accepted as qualified to adjudicate.

Unfortunately these Guilds did not contrive to keep abreast of the times, and when we come to the competition for the dome of the Cathedral at Florence we find that Brunellesco, who ultimately proved to be the ablest architect, was outside the brotherhood.

The story of Brunellesco's restiveness at his old rival Ghiberti being associated with him in carrying out a design peculiarly his own, and how he tried to throw scorn on him by locking up his plans and feigning illness, thus leaving Ghiberti to work in the dark, is too well known to need repetition. Brunellesco's strike for independence appears to have given the death-blow to the great Masonic Guild, which, as it became more unwieldy, had been slowly disintegrating. Although he was matriculated into the Guild, it appears to have been against his will, as he ignored this membership, and was imprisoned for not paying his fees. Thus the Guild drops out as a body controlling competitions, and for a long period such decisions as are made come ostensibly from the laymen interested, or in modern terms the promoters. Though numerous designs were prepared for St. Peter's at Rome, and though some of these were still under consideration when another was demanded, the circumstances hardly justify us in regarding them as competitive. We come nearer to the idea of a competition in the case of the Louvre, where at one stage a selection could have been made from a number of designs.

In the eighteenth century we come to a better organised competitive proposal—namely, that for a monument to Louis XV., where the conditions were exceptionally open in their character. To quote Patte's work published in 1767 :—

> It was on June 27, 1748, that the Provost of the Merchants and Aldermen asked His Majesty's permission to raise, in such a position in his capital as he might be pleased to allocate, a testimony to the zeal, the love, and the gratitude of his people. M. de Turneham, then His Majesty's director of building, invited the architects of the Academy to prepare schemes for the site of such a monument in the quarter of Paris that appeared to the competitor the most suitable. Not only the Royal architects, but also several other artists, seized the opportunity to show their zeal and their talent. These artists chose the quarters that seemed best to accord with the beauties they had in mind, and, guided solely by their genius, evolved designs that would have done honour to the ablest architects of antiquity.

These schemes, however, involved great disturbance among important industrial and commercial interests, and the King having selected an open area between the Tuileries and the Champs-Elysées, a fresh competition was initiated. A site plan was issued accompanied by the single instruction that the King's statue should be on the line of the broad walk in front of the Tuileries garden. Several of the designs had special advantages, and M. Gabriel was directed to combine these, in order to include them all in the executed work. Thus was determined the design of the Place de Louis XV., now the Place de la Concorde.

In the eighteenth century the number of architects in the British Isles was not a large one, and competitions were usually limited to a few. For example, in 1768 James Gandon, Thomas Cooley, and Thomas Sandby competed for the New Exchange, Dublin, which Cooley secured. The competition for the East India Company's building in 1799 produced designs from Holland, Dance the younger, and Soane. Slightly earlier Thomas Harrison won the competition for rebuilding the Castle at Chester.

The fourth decade of the nineteenth century witnessed three important competitions. The first was that for the Houses of Parliament. Ninety-seven designs were submitted to four Commissioners, who on February 29, 1836, unanimously selected that by Charles Barry as the best. For St. George's Hall, Liverpool, there were eighty-six competitors, among whom H. L. Elmes was successful, he subsequently winning the Assize Courts Competition in 1841. The two buildings were combined and carried out during the succeeding ten years. For further particulars I can refer you to Mr. A. E. Richardson's work on Monumental Classic Architecture, from which I have taken this note. The third was that for the Royal Exchange. Robert Smirke, Joseph Gwilt, and Philip Hardwick were the assessors. The first premium was awarded to William Grellier, the second to A. de Chateauneuf and Arthur Mee, and the third to Sidney Smirke. Designs by T. L. Donaldson, Richardson, and David Moscatta were commended, but were considered to exceed the stipulated cost of £150,000. As you know, none of these designs was carried out.

On September 30, 1856, the Commissioners of Her Majesty's Works and Public Buildings gave notice that they were prepared to receive three designs from architects of all countries—the first to comprise a scheme for the concentration of the principal Government offices on a site lying between Whitehall and the New Palace at Westminster; the other two, designs for buildings which it was determined to erect forthwith as parts of such scheme. One of these was to be a Foreign Office, the other a War Office. The paper of instructions to architects, 1,628 copies of which were issued, gave the sizes of all, or most of, the rooms required.

The judges appointed to consider these designs were the Duke of Buccleuch (who was prevented from acting), Earl Stanhope, Viscount Eversley, Mr. William Stirling, M.P., Mr. I. K. Brunel (civil engineer), and Mr. William Burn (architect). The prizes to be awarded were three for the block plan, amounting together to £800; seven, amounting to £1,900, for the Foreign Office designs, and seven, amounting to the same sum, for the War Office designs. The judges awarded the prizes, the premiums were paid, but none of the premiated designs (which remained the property of the Office of Works) were executed.

The obvious defect in the inception of this group of competitions was the simultaneous issue of programmes for a general scheme, and for two buildings that would form part of this. We can hardly be surprised that it ended in a muddle, and left an impression adverse to the competition system. Even in 1880, when Mr. Thomas Porter read a paper here on the subject, he referred at length to this competition in support of his objections to competitions generally, and at this time a large number of members of our Institute seem to have been in agreement with him.

In 1864 a competition was held for Museum Buildings on the site now occupied by the Natural History Museum. It was assessed by a jury composed of Lord Elcho, Messrs. Tite, David Roberts, Fergusson, Pennethorne.

Capt. Fowke gained the first premium, Professor Kerr the second, and Mr. Cuthbert Brodrick the third. Complaints were made as to the drafting of the conditions, which divided the site into two equal halves, and left it very vague as to how far the western half could be used for the accommodation scheduled. This division was obviously unnecessary, and some of the designs, including that of Capt. Fowke, ignored it. Those which did not were thus placed at a disadvantage.

The competition for the Law Courts in 1866 and 1867 was conducted by a Commission, with whose concurrence the following were appointed as judges :—Chief Justice Cockburn, Sir Roundell Palmer, W. Cowper (First Commissioner of Works), W. E. Gladstone, W. Stirling (Maxwell).

In response to an application from the competitors, two professional men—John Shaw and George Pownall—were added. The judges took into consultation every interested party they could call to mind, asking for verdicts on the plans from each special point of view. As may be imagined, though the designs submitted were only ten in number, the affair got into a desperate tangle. As an example, a Report on ninety-nine various points of detail based on the views of heads of departments and other authorities shows that every competitor scores somewhere. Edward Barry is an easy first, and G. E. Street near the bottom of the list. This might in itself be regarded as a sufficient proof of the futility of this method of analysis, but if a further one be needed an inspection of the mass of Reports and investigations resulting will more than suffice.

It is probable that there was never a more conscientious and painstaking jury, but the value of their work was neutralised by an almost complete ignorance of the technique of design. The professional members were evidently overweighted by the ideas of their distinguished *confrères*, and the ultimate results were so inconclusive and confused that everyone concerned must have been relieved when the great beauties of detail in Street's design were made clear, and a justification was found for awarding him the work.

The competition for the Paris Opera House took place in 1860 under the auspices of a jury composed as follows :—MM. Caristie, Duban, De Gisors, Gilbert, Count Walewski (President), MM. Le Bas, Le Sueur, Lefuel, De Cardaillac, Questel, Lenormand, Constant Dufeux, Hittorff, *rapporteur*.

Five prizes were awarded :—First, Jinain; second Crepinet and Botrel; third, Garnaud; fourth, Duc; and fifth, Garnier. No design was considered quite satisfactory, and a second competition between the premiated competitors was advised. As the result of this M. Garnier was in 1861 commissioned to carry out the building.

In 1882 an open competition for the construction of the Sorbonne was held. The jury consisted of three members representing the University of Public Instruction, three members representing the Municipal Council, three members representing the Prefecture of the Seine, three members representing the Professors of the Faculties, six members elected by the competitors.

The site was an extensive one, bounded by streets on all sides, but near the centre of the west side stood the church, and adjoining it a courtyard, to which the following references were made in the programme :—"The church, the character of which is left to the appreciation of the competitors, should be preserved." "It is desired that competitors should also preserve as far as possible the buildings surrounding the court, or at least not materially alter the size and general appearances of the court."

M. H. P. Nenot won this competition with a brilliant design which I wish I could spare time to discuss in detail, but for those interested I may state that in the Library they will find both the original conditions of the competition and a monograph of the completed work.

The competition for the two palaces of the 1900 Exhibition at Paris took place in 1896. The jury numbered no fewer than forty-seven members. Five premiums were awarded in each case. Owing to the amount of work to be done in a short time the Grand Palais was entrusted to the architects placed first, second, and third, with M. Girault, who was placed fourth, as architect-in-chief. M. Girault also secured first place and carried out the Petit Palais. It is interesting to note that little more than two months were allowed for the preparation of these designs, and that the jury arrived at its decision in a fortnight, despite the fact that some two hundred designs were submitted. Only a clear appreciation of the right method could enable such a large jury to arrive at a good decision in so short a time.

In a pamphlet written in 1861 the late M. César Daly deals with Competitions for Public Monuments. The term "monument," of course, has a wider significance than with us, and includes all important public buildings. He takes the view that the competition is vital to architectural progress, and emphasises the following conclusion :—

We require the competition as indispensable for ascertaining periodically and definitely the direction of architectural ideas.

He regards the nomination of the jury (the jury system is not questioned) as the greatest technical difficulty in a competition, on account of the demand that all schools of thought should be represented, and the difficulty that these have in finding a common ground on which a logical decision may be based. After canvassing the various interests that should be represented on the jury for an important public building he comes to the conclusion that it should number thirteen, appointed as follows :—

L'Institut	to nominate jointly	2
Ecole des Beaux-Arts ..		
Conseil des Batiments Civils		
Le Comité des Monuments Historiques		1
La Société Centrale des Architects		2
L'Administration { Administrators		2
L'Administration { Laymen		2
The Competitors		4
		13

He supplements this by a note that some buildings cannot be thoroughly understood without the advice of a technical expert familiar with their uses, but in a jury of the size suggested naturally sees no difficulty in including one so qualified, either with or without a vote.

M. Daly goes at some length into the methods which should be taken by the jury to reach a decision, but in regard to these I can only refer you to his work, which is in the R.I.B.A. Library. He continues with the modifications necessary in forming the juries in provincial centres, suggesting one partly local and partly national, and at the end advocates the competition as of great importance in encouraging an active interest in architecture among the general public. He feels that were full advantage taken of the opportunities it offers in this direction architecture might once more take the place it held in the sixteenth century as an art generally understood and widely appreciated."

Mr. Lanchester then gave a sketch of what the R.I.B.A. had done in the matter of the regulation of competitions, going on to say :—

"Training in architecture, in this country at any rate, has always been rather haphazard and empirical. This was not so serious when only those who had the strongest possible natural bent towards it took up our profession, but when the doors were more widely opened the educational methods should have been more definitely organised than has been the case, and the logical basis on which our art now rests made the foundation of its study. Had this been done the professional handling of competitions would have been a much easier matter and the results much more satisfactory.

The second reason why our practice does not reach our standard of knowledge lies in the necessity for compromise in dealing with promoters, who often only partially understand the real purposes of a competition, and even when they do are technically inexperienced in the methods best suited to achieve these.

Now I wish to be quite fair to promoters, and I must say that when recommendations are put lucidly to them from a clear, logical standpoint, it is my belief that in most cases they would accept advice so supported. The responsibility for seeing that they receive this rests with the architects, and more important competitions have fallen short of the standard they might have reached by our own default than by reason of any intentional malpractice on the part of promoters.

I shall be able to deal with these points more clearly by taking the three parties to a competition in turn, and endeavouring to define the functions of each, in relation to the methods by which, in my view, they can best discharge their respective obligations.

These three parties are :—(1) The promoters, (2) the assessors or jury, (3) the competitors.

The promoters may or may not schedule their requirements before inviting professional aid, but this is almost the full extent of what can be profitably undertaken without consultation with the professional advisers who are to conduct the competition. It is therefore more convenient to consider the functions of promoters and assessors together. We can realise more clearly the relationship between them if we grasp the fact that it is in every respect similar to that between client and architect during the earlier stages of any projected building work. Just as the architect gives advice on the suitability of a site, adequacy of cost, accommodation needed, and all other matters that are not predetermined by force of circumstances, so those that adjudicate in a competition should advise the promoters. The fact that a competition is to be held in no way justifies the abandonment of these preliminary consultations.

No reasonable man in employing an architect fails to consider his advice, even if he does not always take it, from the very beginning of the undertaking, and promoters ought not to deprive themselves of this, even though the ultimate architect has yet to be selected. The idea that everything must be in shape before the assessor or assessors is appointed is utterly wrong, and has been responsible for the comparative failure of many a competition.

On the architect's side this responsibility has not received much more definite recognition than with the promoters. Assessors have often failed to realise that they ought to give the same meticulous consideration to the various aspects of the proposition as they would in the case of a building they were invited to carry out themselves. It is their duty to see that the interests of the promoters suffer in no way through the successful competitor not having been in personal touch with them from the beginning, and assessors can best realise this requirement by regarding themselves as representing the unknown competitor who will ultimately take up and continue their work.

Continuity from start to finish, such as we find in non-competitive work, is the great need in competition practice. At present there is a tendency to cut it up into three distinct stages, greatly to the detriment of the result. The first stage before the appointment of the assessor or jury, the second during their appointment, and the third after the selection of the design.

To put competitive practice on a sound basis the breaks between these stages should be bridged over, and I venture to suggest a procedure by means of which this may be achieved. I do not say that there may not be better ways ; the one I put forward is merely a suggestion as to the type of procedure that might be appropriate.

Let us assume that some public body is promoting a competition and has appointed a Building Committee. After some preliminary discussion they would ask for the appointment of an architectural adviser and depute two well-qualified members to confer with him, possibly the Chairman and City Engineer, or Chairman and Medical Officer, according to class of building. These three would draw up the programme. Before issuing this, two other independent architects would be added to form a jury of five, and on the programme having been agreed by them, it would be issued to competitors. The usual stages of questions, replies, and receipt of designs having been passed through under the supervision of this jury, its members would jointly make their award, dealing very fully with all the considerations necessary to inform the successful competitor as to any fresh aspect that has occurred to them during the adjudication. Their award might be in two parts, one for publication, and the other more of the nature of a confidential communication to the selected architect in order to make him conversant with problems and difficulties that may affect the further development of his design. I do not think I need say more on the promoter's share in a competition, and will now turn my attention to the assessors.

I have often heard it said that a good architect is necessarily a good assessor, but to my mind this is not the case. The expression of personality within the confines of architectural technique is the measure of artistic quality, but the less imaginative man with a better training in technique may be superior as a judge to the greater artist who is perhaps unable to analyse the operations of his own mind.

Now the same intuition that enables an architect devoid of the analytical faculty to produce a brilliant design may empower him to select the ablest one submitted in a competition. That is not the weak spot in his equipment as an assessor. This will be discovered in the earlier stages, such as discussions with the promoters and the preparation of the programme. To place the issues properly before a clear-headed business or professional man whose experience is outside the technique of art demands a faculty of logical exposition and an experience of the difficulties involved which are not essential concomitants of imaginative force. Of course "the legal and logical mind" is useless without artistic ability, but artistic ability is equally useless in this case if its methods are intuitive.

You will notice that in my suggestion for the conduct of a competition I have introduced one of the architects a stage earlier than his two professional brethren. I have done this in order to take advantage of employing one specially qualified by his attitude of mind and his experience to thrash out with laymen those points of detail and method that are so often misunderstood. He is thus "the forerunner" who paves the way for his association on the jury with one or more whose artistic qualifications may perhaps rank higher, but whose limitations in other respects might preclude their being entrusted with the conduct of a competition.

As a general rule, experience as a competitor is almost essential as a qualification for the single assessor, but in the case of a jury this experience may be dispensed with in some of its members if it is in other respects advantageous to have a wider field for selection.

To use the phrase quoted from César Daly, "The direction of architectural ideas" is subject to gradual change, and the pioneers of one generation become the exponents of the academic school in the next. In order, therefore, that vital fluctuations in our art shall receive due appreciation it is desirable that the adjudication of competitive designs shall not be entirely in the hands of the older and more experienced men, whose sympathies are liable to incline towards the earlier as against the newer methods. At the same time, experience and mature judgment are invaluable, so that one of the chief recommendations of the jury system is the facility it affords for securing both the experience of the elder and the fresher point of view of the younger men.

Finally, we come to the competitor, who, when he has decided to compete, sets down to master the programme, or conditions as the document is more usually called. Actually the conditions include the programme, which is the part essential to the preparation of the design. If the programme is well drawn up it should at once give the competitor a good general impression as to what the promoters have in their mind; if it is not, the competitor, by much reading and rereading, will gradually obtain, from accidents of phrasing here and there, some idea of the points to which importance is attached. With a good programme no further questions should be needed, otherwise further information must be obtained.

From the competitor's point of view the best programme is one that states clearly what is wanted but makes no attempt to indicate how these wants are to be provided for. As a rule the allocation of the relative positions for the accommodation asked for is a mistake, tending to hamper freedom in the conception of the design. If special requirements have to be met, it is far better that these should be thoroughly explained than an attempt made to anticipate the competitor's work by specifying some definite arrangement."

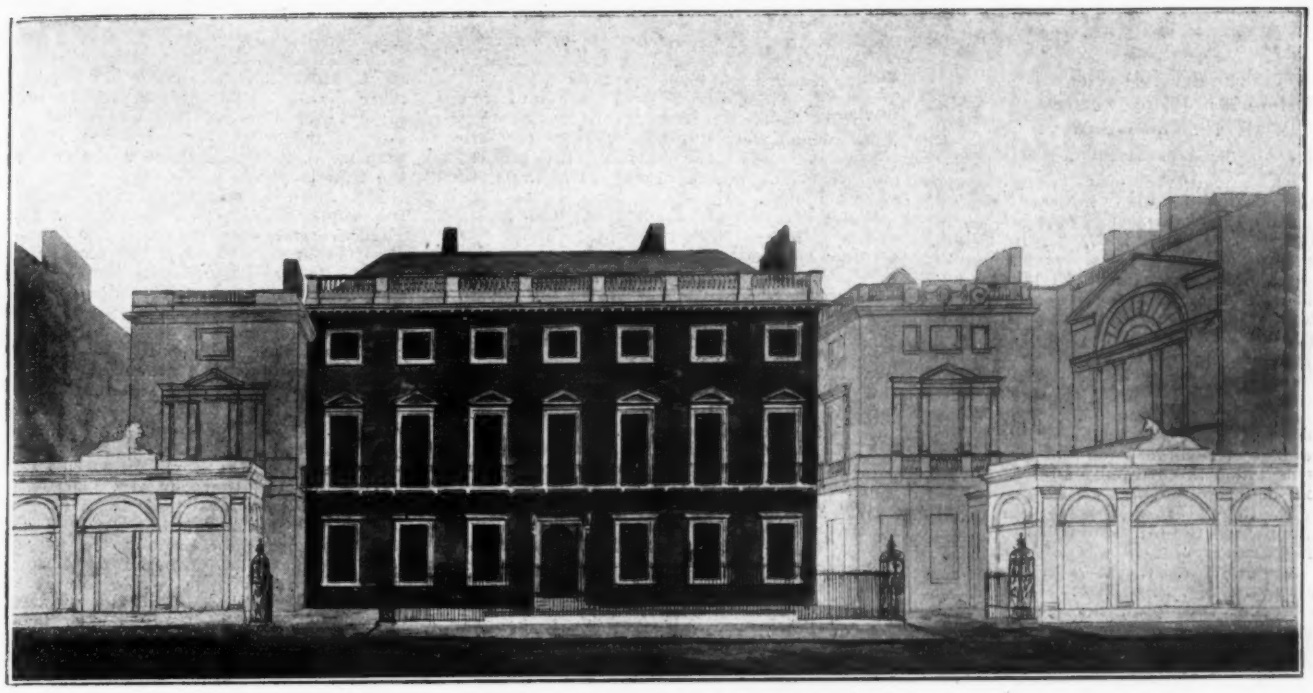
A discussion followed. Mr. Cross, in moving a vote of thanks, expressed his firm conviction that the Greeks must have employed the competitive system in many instances.

Mr. J. S. Gibson, in seconding the vote, expressed great appreciation for Mr. Lanchester's paper, which he considered would prove one of the most valuable contributions ever made to the subject, a contribution which would have helped him (the speaker) in the past and would afford help to many in the future.

Mr. A. E. Richardson managed to quote the opinion of authorities in such a way as to emphasise the pernicious nature of all competition.

Mr. Statham, Mr. Adshead, and others followed, and the vote of thanks was passed by acclamation and the proceedings terminated.

The Chairman announced that the next meeting will be held on Monday, June 7, when the results of the annual elections will be announced and an election of members will take place.



The Old War Office, Pall Mall.

THE OLD WAR OFFICE, PALL MALL.

THIS illustration from the Soane Collection shows the centre portion of the old War Office in Pall Mall, coloured, the supporting buildings, which are attributed to Robert Adam, being left in outline. Sir John Soane had this drawing made to illustrate his remarks concerning the treatment of appendages and other subsidiary features, which latter should serve to emphasise the centre mass without confusion. The building to the right of the drawing was occupied in the eighteenth century by an auctioneer named Lamb; this building, having the advantage of a large public room, formed the original home of the Royal Academy. Here it was that Sir Joshua Reynolds delivered the first of his celebrated lectures, and in this same room the meetings and exhibitions were held prior to the transference of the Royal Academy to Somerset House. This building was afterwards occupied by Christie, the auctioneer.

COMPETITION NEWS.

It must be understood that the following paragraph is printed as news, and not as an advertisement; and that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.

The list of current Competitions is printed on page 498.

Remodelling Central Bradford.

Mr. Reginald Blomfield, R.A., the assessor appointed by the Bradford Corporation to consider the competitive designs for the replanning of streets in the central area of the city—the area lying between Forster-square and Peel-place and bounded by Market-street, Leeds-road, and Hall Ings—has now made his awards.

The area to be remodelled comprises between ten and eleven acres, and among the conditions imposed upon competing architects were that Bank-street should be continued into Leeds-road, and that the *Bradford Daily Telegraph* buildings and the Swan Arcade should be retained. In all fifty-four sets of designs were submitted, and the awards are:—First (£500), Messrs. Gibson, Skipwith, & Gordon, 5, Old Bond-street, London (Design No. 25); second (£300), Messrs. Patrick Abercrombie and Lionel B. Budden, the School of Architecture, Liberty Buildings, Liverpool (No. 14); third (£200), Mr. Reginald Dann, Hunting Grove, Crawley, Sussex, and Mr. John H. Horniman, Hastings (No. 36). The principal feature of the first scheme is a new street, 60 ft. wide, running from Peel-place to the Midland Railway station. Peel-place is considerably enlarged, and is converted into a fine circus, forming the converging point of the projected new street, of Hall Ings, and of a continuation of Bank-street, which is to follow a line which, roughly speaking, will cross the site of the George Hotel. On the northerly side of the circus the architects propose to place a fine semicircular sweep of buildings carried continuously from each extent of the circus and broken only by archways to give access to the new street, Bank street, and Hall Ings. The line of Brook-street is to be altered so that it may be connected with Peel-place by means of an arcade. The line of Charles-street is also altered so that it leaves Market-street, crosses the new central street, and turns into Forster-square. Between Leeds-road and the Midland station there will be four railway bridges—one over Leeds-road, one over Hall Ings, one crossing the extension of Charles-street, and one passing over Forster-square. The second scheme is very similar to the first in its main features. Peel-place is enlarged and made the radiating point of the replanned streets. The architects state their leading idea to be "the connection of the railway stations by a wide shopping street," and project a long central avenue almost identical with the proposed new street of the first scheme. Charles-street is to be treated in a similar manner to that of the first scheme. A new feature is a suggested road running co-extensively with the new Midland railway line. It is interesting to note that the site which will lie between the Bank-street continuation, Market-street, and Leeds-road, is suggested as suitable for a new Exchange, for which the architects offer tentative designs. Mr. Dann and Mr. Horniman also propose a wide central street between the two railway stations, and they suggest a new Exchange on the same site as that selected by the authors of the second scheme. They propose to carry Charles-street across the central thoroughfare, but to turn it parallel to the railway and carry it into Leeds-road. They suggest certain modifications of the line of Brook-street and connect it with Peel-place by means of a continuation of the Swan Arcade through the block of buildings which will divide Brook-street and Peel-place. They also propose to retain the Bradford District Bank buildings.—*Yorkshire Observer.*

OBITUARY.

Mr. J. A. Reeve.

The death on May 10, at Yarrow Bank, Kingswear, is announced of Mr. Joseph Arthur Reeve, aged sixty-four years. Amongst his recent architectural work we may mention the Church of St. Anne, Roath, Cardiff, of which we published illustrations on November 5, 1887 (exterior), and April 18, 1888 (interior); the screen, Holy Cross Church, Ramsbury, Wilts; memorial cross in Addington Churchyard, Surrey, to some of the Archbishops of Canterbury who were buried there; and the restoration three years ago of the parish church of Sall, Norfolk, in conjunction with Mr. William Weir, the work for the nave and south aisle being entrusted to Mr. Reeve. We understand that Mr. Reeve co-operated with Mr. W. H. St. John Hope in the exploration of the ruins of Fountains Abbey, of which a description was written by the Rev. A. W. Oxford, with illustrations and photographs by Mr. J. Reginald Truelove, A.R.I.B.A. (1910).

GENERAL NEWS.

Liverpool Cathedral.

A party consisting of members of the Liverpool and Manchester Architectural Societies and others were conducted over the Liverpool Cathedral and the works recently, and the progress made was explained to them by the architect, Mr. Gilbert Scott, F.R.I.B.A. Among those present were Mr. E. P. Hinde (President), Mr. Egerton L. Bower and Mr. E. H. Honeyburne (Hon. Secretaries of the Liverpool Society), Mr. F. P. Dunkerley (President), and about a dozen members of the Manchester Society. It was pointed out that the Chapter House and chancel were almost completed, and it was hoped that the transepts and the central space between, which already reach a height of 50 ft., would be finished and opened in about two years.

Garden Suburb Housing.

To commemorate the eighth birthday of the Hampstead Garden Suburb a party of about a hundred shareholders and others visited the suburb recently, and were entertained to tea at the clubhouse. Mr. Henry Vivian, J.P., Chairman of the co-partnership societies which have undertaken most of the building on the suburb, said that the position of these societies was very satisfactory. Since the end of 1907 the cost value of their property had grown from £4,000 to £663,000, and in the same time their capital had increased from £10,000 to £330,000. The total number of houses owned by the co-partnership societies at the Hampstead suburb was over 1,200, and, with a rent roll of £43,000, the arrears were less than 1 per cent. Nearly all houses rented below £50 per annum were let to investors in the owning societies.

The Concrete Institute.

The sixth annual general meeting of this Institute was held at Denison House, Westminster, S.W., on May 6. Professor Henry Adams, M.Inst.C.E., Pres.C.I., submitted the annual Report and balance-sheet, which were adopted by the meeting. It was announced that as the result of the annual election of members of Council the following had been elected:—Mr. R. H. Harry Stanger, A.M.Inst.C.E.; Mr. D. B. Butler, A.M.Inst.C.E.; Dr. J. S. Owens, B.A., M.D., A.M.Inst.C.E.; Mr. W. G. Perkins, District Surveyor for Holborn; Mr. Ewart S. Andrews, B.Sc. (Lond.); Mr. J. Ernest Franck, A.R.I.B.A.; Mr. Lewis H. Rugg, A.M.Inst.C.E.; Mr. G. C. Workman, M.S.E.; Mr. J. S. E. De Vesian, M.Inst.C.E. The President presented the Institute's medal to Mr. W. Cyril Cocking (member) for the best paper read during the Session 1913-14, namely, that entitled "Calculations and Details for Steelframe Buildings from the Draughtsman's Standpoint." The sixty-second ordinary general meeting then followed, when the adjourned discussion on Mr. Osborn C. Hills's paper, entitled "The London Building Acts with Some Suggested Amendments," was resumed.

LAW REPORTS.

KING'S BENCH DIVISION.
(Before Mr. Justice SCRUTTON.)

Important Pipeline Case:
The China Clay Corporation *v.* Worth and Another.

HIS Lordship concluded the hearing on Tuesday, May 11, of an action brought by the China Clay Corporation, Ltd., Austin Friars, E.C., against Mr. Richard Hansford Worth, civil engineer, of George-street, Plymouth, and Mr. William Caine Shaddock, contractor, of 16, Mutley Plain, Plymouth, in connection with the construction of a pipeline eight miles in length, from Redlake, Dartmoor, to Cantrell.

The claim amounted to between £10,000 and £11,000, and allegations of negligence and breach of duty were made. Mr. Worth counterclaimed £150, alleged to be due to him as the balance of remuneration and also certain small items which the company admitted. Mr. Shaddock counterclaimed two sums of £464 and £558, alleged to be due to him. Both defendants denied the allegations made against them. Negligence and breach of duty were alleged against Mr. Worth and breach of contract against Mr. Shaddock.

Counsel for the plaintiffs, Mr. J. B. Matthews, K.C., and Mr. Douglas M. Hogg; for Mr. Worth, Mr. Holman Gregory, K.C., and Mr. Barnard Lailey, K.C.

Mr. Shaddock appeared in person.

Opening the case, Mr. J. B. Matthews said the company was incorporated in January, 1910, to acquire leases and work clay properties near Harford, Devon. The leases were granted by the Duchy of Cornwall, and the plaintiffs also acquired land at Bideford, adjoining the G.W. Railway main line, and the object was to convey the clay as it left Dartmoor to the company's works at Cantrell. There was to be a double line of 9-in. pipes, which would convey the clay in suspension in water. The clay was probably the finest in the world. The issued capital of the company was £120,000, and the first chairman was Mr. C. O. Hanson, an Alderman and ex-Sheriff of London. The present chairman was Mr. H. Malaby Deeley, M.P.

Dealing with the nature of the work to be done, counsel said the first essential of a pipeline was that the gradient should be continuous and uniform with curves at the manholes. Counsel said that no attempt had been made to comply with those elementary essentials of engineering.

The first witness for the plaintiffs was Mr. John Mutton, local manager of the company's properties at Cantrell, Ivybridge, and on Dartmoor. He explained the method of obtaining china clay and the removal of impurities, and said its consistency was that of thin cream. It was very important that the clay should not be discoloured during the conveyance through the pipeline, and it was absolutely essential that the pipes should be watertight.

Dealing with the alleged irregularities in the pipeline, witness said this may have affected its watertightness.

Mr. Holman Gregory (cross-examining) asked if it was not usual, in such a case, to curve the line if obstruction in the form of granite boulders was met with? Witness said there were curves where there were no boulders.

Answering Mr. Shaddock, Mr. Mutton agreed that shortly before the work was commenced, and, in fact, while it was being done, terrible weather and floods were experienced, and outlets had to be cut and pipes laid under the railway near by to carry the storm water under the line. This was done to protect the railway from the effects of the flood.

Mr. Shaddock: It was a very important matter?—It was a proper provision to make.

That kind of work had already been anticipated and allowed for by the engineer?—It was in his instructions.

It would amount to a considerable sum?—Oh, yes; I think we had one hundred places to do altogether. We cut little V-shaped channels so that water coming from the Moor was intercepted and carried under the railway through the pipes that were laid.

Where did it go, then?—Down to the river, I suppose, and possibly to your trench.

Was the pipeline parallel to the railway for the first three miles?—Yes.

At what distance away?—Two or three hundred feet, and in some cases as near as 60 ft.

Then you relieved the railway and damaged the pipeline track?—We were ahead of you, so that the water was there when you came on the spot.

Mr. Midgley Taylor, M.Inst.C.E., of Westminster, said there were defects in the pipeline which, in his opinion, should never have occurred if the engineer had exercised proper supervision of the work. He should have noticed that the work was not being properly done, and the presence of the clerk of the works would not absolve him from that responsibility. If there had been sufficiently frequent tests, the quality of the work and the defects would have been revealed.

Mr. E. G. Roberts, local foreman of the plaintiffs, spoke of leakages he found in the pipes, which were disclosed by a water test.

This concluded the case for the plaintiffs, and Mr. Worth, one of the defendants, then gave evidence.

He said tests were made from time to time, and any defects were remedied. There was a resident engineer, whose monthly reports stated that regular tests were applied. Absolute uniformity was neither necessary nor usual in a case like this, as would be in the case of a sewer, through which things like legs of mutton and broken pieces of furniture sometimes passed.

Cross-examined by Mr. Shaddock, witness said he allowed the contractor for all delays due to absence of materials.

Do you admit that it is necessary for an engineer to supply plans and sections for a job like this previous to tender?—No.

Did you give me a plan?—Yes.

Mr. Shaddock: Never!

Mr. Worth insisted that he always did so.

Continuing, witness said that, although he did not expect to get the very best pipes, he did expect to get watertight ones. In second-class pipes it was quite possible to get watertight ones. He had rejected many of the pipes supplied, and Mr. Shaddock had also rejected many.

Mr. Shaddock denied this, and said he had nothing to do with the pipes except that they were supplied according to price.

The invariable rule, said Mr. Worth, was that if anything was unfit for the work, the contractor could reject it.

Two witnesses were interposed during Mr. Worth's evidence.

Sir Maurice Fitzmaurice, C.M.G., approved of the pipes which were used, and said they were "selected seconds."

Cross-examined by Mr. Shaddock, witness admitted that sometimes such pipes "were out of the true" and had small surface defects.

The second witness was Mr. Alexander Ross, the President-elect of the Institution of Civil Engineers, who said that he had for many years done responsible work for various railway companies. He knew of the double row of pipes which had been arranged in this case, and considered the joint holes that were provided were totally unnecessary.

Have you ever used yarn in making pipe joints?—Only when compelled to, but I do not think it is absolutely necessary in order to make joints watertight.

Mr. J. B. Matthews, K.C. (cross-examining): Do you think that the use of yarn in making the joints requires special supervision?—No.

Do you think such a condition of things would be possible as were found in this case if there had been adequate supervision?—It is evident that it has happened, but I do not see where any neglect comes in.

Mr. Worth then re-entered the witness-box and was cross-examined by Mr. Matthews:—

Have you heard of a clerk of the works being paid to look the other way?

Witness: I have been fortunate. I have never met with such a case.

Have you ever heard of such a case?—I have never known of such a case being brought home.

Can you believe it possible that if a resident engineer and clerk of the works did anything like their duty, there was any possibility of their passing such a thing as this?—To some extent, I could believe it; they might do it in error.

Was there any room for error on this occasion?—There is room for error. If you are satisfied that things are going well, you slacken supervision.

I put it to you that you slackened supervision. If you had been reasonably diligent you would discover that the work had been "monkeyed" and not properly done?—I deny that.

Mr. Frederick Samuel Gould, civil engineer, stated that he had been associated with Mr. Worth in a number of important engineering contracts previous to this work. He was given the gradients of the work.

Witness said he impressed upon the clerk of works the necessity of watching the joints. He satisfied himself that they had packed the joints and laid the pipes properly. He had no suspicion that the joints had been improperly made. He never received any complaints from the clerk of the works at any time.

Cross-examined by Mr. Shaddock, witness admitted that there had been a delay in the cartage of material at one period, owing to the heavy rains and soft roads. He did not think there was any shortage of men. The slate slabs supplied by Mr. Shaddock were a very good sample.

In cross-examination by Mr. J. B. Matthews, witness said he had never seen the trenches filled in in such a careless way that damage was done to the pipes. It was a matter of impossibility to fill in a long trench without an accident; but he should not expect to find more than a dozen cases of broken pipes in a pipeline of 8 miles. He had never reopened any of the work for inspection. It was a surprise to him that there was any leakage in the pipes.

Mr. John Ernest Absworthy, electrician in the employ of Messrs. Heath & Co., Plymouth, gave evidence with regard to the connection of the telephone cable and the tests which were made. It was subsequently found that a cable had been fractured on the edge of a manhole. On reopening the trench he found other faults in the cable, most of which had been caused by blows from excavators' tools.

Sir Whately Eliot, a member of the Institution of Civil Engineers, stated that he was the resident engineer when the drainage work was carried out some years ago at Weymouth. He also had charge of other important works. He went with Mr. Worth on August 12, 1913, to Dartmoor, and there he saw 3,000 ft. of pipes which had been uncovered, and a further length of 500 ft. which had been uncovered sufficiently to show the upper part of the pipes. There was nothing in the appearance of the pipes to show any defect in laying or joining. He saw no signs of settlement or any indication that the trenches were too narrow for making proper joints. In his opinion, nothing would have been gained by having joint holes.

Mr. Henry Hancock, surveyor, of St. Austell, Cornwall, stated that he had seen twelve or fifteen lines of pipes laid in connection with the china clay industry, and had never known of joint holes being made or yarn being used.

Further evidence was given by Mr. Henry Percy Bulnois, who said he had been Engineering Inspector to the Local Government Board. He was in favour of joint holes, but not of yarn being used. When he visited the works on July 3 he thought, on looking down the line, that it was an admirable length of sewer. There were a few air cracks. On inspecting the pipe carriers on bridges, he found that rough concrete was being used, but there was nothing defective in the work. On a second visit on August 26 he inspected the trenches and found the soil was excellent for the purpose. The leakage, he considered, was caused by a lack of cement in the joints. The workmen, apparently, had not made the joints properly.

Mr. William Caine Shaddock then gave evidence.

He said he had been acting as a contractor since the age of eighteen, and was now sixty-three. When contemplating tendering for the contract he inspected an ordnance map showing the route the pipes were to take. It was impossible for anyone merely working on the map to know exactly where some portion of the work was to be done. When he tendered on July 17 he only saw the ordnance map, and was not shown any plan. He had to take the explanation given him by Mr. Worth and his assistant. He formed the impression that the Corporation had not decided on the exact route. He had never heard the name of a man who had tendered and had never seen a list of the tenders. Mr. Worth told him that his tender was very near to his (Mr. Worth's) estimate.

Witness described the difficulties he had to contend with at the commencement owing to the light railway of the Corporation not being completed.

Referring to the construction of the bridges for carrying the pipes, witness said on one occasion the water came down and flooded the lot. If some of the concrete was more "holely than righteous," it was due to this fact and also to the absence of proper sand.

Referring to the arches, witness said: "If some of the men of the Stone Age had come round, they would have been reminded of old times." He thought he had only seen Mr. Worth on the works twice—his son said he had seen him three times. He was of opinion that Mr. Worth used to go along in the train and look out of the window. Mr. Worth had relied on Mr. Gould's monthly report as to what was done. He had never disputed the accounts at any time. He had done his best to carry out his work in a satisfactory manner. No man had been instructed by him to put in inferior work. There was a difficulty in keeping the men together. They might have kept the men together if they had been allowed to ride on the line in the same way that the Corporation men did. There were thirty wet days in August and eighteen in October.

It was untrue that he was "kicked out" of the contract; he would not go on any further. He had made an offer that if he was in fault he would have to stand the racket. On the other hand, if he was not in fault, the Corporation should pay. A great deal of the trouble was caused by the storm water.

Witness thought that the leakage was caused by the cracks in the manufacture of the pipes.

His Lordship: Do you say that any leakage was caused by your not having proper plans?—No: but I go thus far, the line should have been laid as a sewer, viz., from point to point, so that you could see right along.

Another witness was Mr. John Chadwick, civil engineer, practising at Bletchley, Bucks, and now serving as a major in the Army, and after the final speeches of counsel, his Lordship reserved his judgment.

[Judgment will be given in our next issue.]

KING'S BENCH DIVISION.
(Before Mr Justice ATKIN.)

Bristol Builder's Claim:
Colborne *v.* Jones and Others.

AFTER a hearing lasting several days, his Lordship last week concluded the investigation of a claim by Mr. A. J. Colborne, of Baldwin-street, Bristol, against the Rev. J. W. Jones and others, relating to the erection of a church at Ammanford, Wales.

Mr. Morton, K.C., and Mr. C. Smith were for the plaintiff; Mr. Hawke, K.C., and Mr. Doughty represented the defendants.

Mr. Morton said the plaintiff was a builder, formerly of Swindon, and he brought his action on an allegation that the defendants had wrongfully determined and repudiated an agreement to build a church. The defendants pleaded justification, and counter-claimed £884 for alleged delay in the work. They also relied upon certain clauses in the agreement, which, they said, entitled them to terminate the agreement.

The Rev. J. W. Jones was Secretary of the Building Committee, and acted as the Committee's agent in the matter. Mr. W. D. Jenkins was appointed architect and surveyor, and the contract price for the church was £5,349. It was to be completed within a specified time, and there was a "default" clause which gave the defendants certain rights in certain circumstances. There was no arbitration clause. The work done by the plaintiff was priced at £5,158, and he had been paid £2,597 on account. He now claimed the balance.

Mr. Morton went on to say that, after the issue of the writ, the architect signed the certificates and complained of delay. He wrote to the plaintiff alleging that, in order to cover up his inability to forward timber to the site, he adopted the ingenious method of endeavouring to shift the responsibility by repeatedly asking the architect for other details, and suggesting he could not get on without them. This the plaintiff stoutly denied, and counsel contended that the determination of the contract was due to the defendants or their representative.

Mr. Arthur Joseph Colborne (the plaintiff) gave evidence that in July, 1913, a receiving order was made against him, and his trustee was continuing these proceedings. He said there was considerable delay in the building of the church, because he had to wait for the architect's details. It was for a builder to say how he was going to set about a job, and if he was interfered with he could not get on. In this connection he once wrote to the architect and told him it was his duty to judge of the results after the work was done. So far as he was concerned he pushed on with the work as fast as he could.

Mr. Hawke (cross-examining): I suggest that you made no preparation for this job whatever?

Mr. Colborne: As soon as I got the specifications I made proper preparations for carrying on the job.

Witness admitted that he had difficulty in regard to sand for the job. They tried to get it, but could not, as there was a sand famine in the district.

Evidence was also given by Mr. David Thomas Allen, formerly manager for Mr. Colborne in the South Wales district. He expressed the opinion that the presence of a lot of timber and stone for the building on the site would have hindered the work, because they could be better dealt with in the builders' workshops.

Other witnesses having been called,

Mr. Hawke, K.C., on behalf of the defendants, submitted that the architect was not their agent, and Mr. Smith (for the plaintiff) replied that his case was that the building owner wrongfully repudiated the contract.

His Lordship said he was satisfied the defendants could be held liable if the contract was wrongfully terminated.

Counsel for the defendants argued that there was no delay due to the architect. There was a clause in the contract, he said, which made the architect the sole judge on all matters arising out of the contract.

Mr. William David Jenkins, the architect, was then called, and expressed the view that too few workmen were employed to clear the site. Certain variations were made in the contract, but these were to the benefit of the builder. He complained of the insufficient number of men and of the way the material was brought up. There seemed to be a lack of method on the part of the builder, and this caused delay.

Under cross-examination by Mr. Morton, the architect said if the builder had started to cut the stone on the site according to the details, he would not have stopped him. He maintained that he had a perfect right to vary the drawings for artistic effect, so long as the builder had them in time to cut the stone. Witness denied that he kept the builder waiting at all. He fixed the site of the church in April. The work proceeded very slowly, owing to the lack of men.

Mr. Jenkins contended that he had the power to terminate the contract if it were not, in his opinion, being carried out properly.

Evidence was also given by the Rev. J. W. Jones, who said he lived close enough to notice the progress of the work. He was surprised at the slowness of the work. There was never any difficulty about the money at any time, and when the work started the Building Committee had over £3,000 in the bank.

Mr. E. Morris, clerk of the works, was also called, and expressed the view that the work was not proceeded with as expeditiously as it should have been, and an insufficient number of men was employed from the first.

His Lordship eventually reserved his judgment.

CHANCERY DIVISION.
(Before Mr. Justice ASTBURY.)

West-End Light and Air Action:
Murray and Others *v.* Agnew and Another.

THIS case, which came before his Lordship last week, was an action having regard to the ancient lights of Nos. 48, 50, and 50A, Albemarle-street, W., the plaintiffs asking for an injunction to restrain the defendants from erecting on the site of their premises, Nos. 3 and 4, Albemarle-street, any building higher than that formerly standing there and recently partly demolished, so as to darken or obstruct the ancient lights of the plaintiffs' premises in such a manner as to cause a nuisance or illegal obstruction to the said ancient lights or windows, as the same were enjoyed before the defendants' alterations.

Mr. Frank Russell, K.C., and Mr. Pollock appeared for the plaintiffs, and Mr George Cave, K.C., and Mr Austin Cartmell for the defendants.

Mr. Russell said the plaintiffs were Mr. John Murray, the well-known publisher, and the owner in fee simple of Nos. 50 and 50A, Albemarle-street; Mr W. H. Dawson, the owner in fee simple of No. 48; and Messrs Blount, Lynch, and Petre, who carried on business as solicitors at No. 48. The defendants were the celebrated art dealers, Mr. W. L. Agnew and Mr. C. Agnew. The windows of the plaintiffs' premises had remained unaltered for the last twenty years, and opposite to them was the site of Nos. 3 and 4, owned by the defendants, and there there had stood a building for the last twenty years. The average width of the street was 47 ft. 6 in. Defendants alleged that their new building would not interfere with the comfortable use and enjoyment of the plaintiffs' premises as they were before the defendants' alterations according to the usages of ordinary persons in that locality. This the plaintiffs challenged, and their case was that the defendants' new premises would materially interfere with the enjoyment of their premises according to ordinary usages.

Mr. John Murray gave evidence in support of his case. He said he was born at No. 50 in 1851. Formerly the ground floor was a fairly well-lighted floor, and they had to use artificial light before noon; but since the erection of the defendants' building it was nearly always in use. No. 50 was used as a private house, and No. 50A as business premises. There was an appreciable deterioration of the light that now came to the premises. It was in the fireplace of the drawing room of No. 50 that Byron's memoirs were burned. The comfort and enjoyment of No. 50 was much affected by defendants' building.

Mr. A. B. Yeates, of 18, Maddox-street, architect and surveyor, examined, said in October last he was consulted by the plaintiffs with reference to the building the defendants proposed to erect. He got into communication with Mr Harrison Townsend, defendants' architect, and saw a drawing showing the old and the proposed new buildings. The proposed new building was much higher than the old building, and would obstruct the view of the skyline from certain of the plaintiffs' windows, and the loss of light to some of the windows was considerable.

Mr. Howard Chatfeild Clarke and Sir Alexander Stenning also gave evidence in support of the plaintiffs' case.

At this stage a consultation took place between the parties, and in the result the defendants agreed to an order restraining them from carrying their buildings other than chimney-stacks and dormer windows beyond the height from which a line drawn to the sill of the ground-floor window of plaintiffs' premises would produce an angle of 42½ degrees with their front wall, and to pay an agreed sum of costs.

The expert witnesses retained to give evidence on behalf of the defendants were Sir Howard Frank, Mr. W. Woodward, Mr P. E. Pilditch, Mr. C. H. Townsend, and Mr. E. K. Purchase.

Solicitors: Messrs. Capron & Co. for the plaintiffs; and Messrs. Finnis, Downey, Linnell, & Chessher for the defendants.

OFFICIAL REFEREE'S COURT.
(Before Mr. MUIR MACKENZIE.)

Complete Wood-Flooring Co., Ltd., *v.* King and Another.

THIS action, which was concluded on Tuesday, May 18, by Mr. Muir Mackenzie, one of the High Court Official Referees, was brought by the Complete Wood-Flooring Company, Ltd., against Messrs. King & Arnell, building contractors, to recover the sum of £536 10s. 2d., the balance of an account of £786 10s. 2d. for laying wood-block flooring at one of the new buildings in Kingsway, London, known as West Africa House.

Mr. Lever was counsel for the plaintiffs, and Mr. F. J. Enness appeared for the defendants.

From the statements of counsel it appeared that a contract was entered into between the parties by which the plaintiffs undertook to lay 2,500 yds. of oak block flooring at 6s. 9d. per yard super., the terms of the contract being that the material used should be the best English oak in blocks of 1 in. in thickness, and that the work should be commenced in the middle of February, 1914, and completed within three weeks from the date of commencement. It was further stipulated that the whole of the blocks should remain sound and satisfactory for a period of six months. The defendants alleged a breach of agreement, both as regards the time of completion and the character of the work done. On these grounds they disputed liability, but at the same time they brought into Court £386 10s., and put in a counterclaim for damages for breach of contract of £58. Associated with the plaintiff company, said Mr. Lever, was the well-known firm of timber merchants, Messrs. Howard Brothers & Co., Ltd., of Canning Town, and the introduction originally took place through that company, upon whose premises the timber to be used was inspected by the defendants, who also inspected their process of drying. Messrs. Howard Brothers, as well as the plaintiffs, guaranteed that the work should be properly carried out. The defendants complained of delay, but this the plaintiffs said was caused primarily by the defendants altering the date for the commencement of the work. The plaintiffs also said that they had agreed to make good any defects from shrinkage. The defendants further alleged that the wood used was not all English oak, as specified in the contract, and this the plaintiffs admitted, but said that where other than English wood was used it was either Austrian or Dantzic oak, the former being better than English, and the latter equal to it, although more expensive. They denied that there had been any breach of contract, which was to supply a satisfactory flooring, and that they had done this the flooring itself showed.

The Official Referee, in the result, found that there had been a breach of the contract on the part of the plaintiffs, both in regard to the materials supplied and the manner in which the work had been done. He therefore gave judgment for the defendant on the claim, with costs of the action, and for the plaintiffs on the counterclaim, without costs on either side.

PARISH CHURCH OF ST. WOOLOS, NEWPORT, MON.

The old parish church of St. Woolos, at Newport, Mon., has been recently repaired. The west tower has been repointed, the bells rehung, and the old gallery replaced to form a choir vestry. The Lady Chapel between the tower and the church has had the old windows reinstated, the arched rafter roofs opened up, and the timbers repaired. The floors of the nave and aisles have been lowered to their original level, the centre passage paved with old grave slabs, and the rest laid with oak blocks. All the windows have been reglazed. A new vestry for the clergy has been added and the church heated by hot water, fitted with oak seats and a new organ. The total cost of the work has been about £8,000. The architect is Mr. Harold Brakspear, F.S.A., of Corsham, Wilts, and the general contractors Messrs. William Davies & Son, of Newport. The seats and organ case were executed by Messrs. King & Davies, of Newport; the windows by Messrs. Pearce, Ltd., of Birmingham; and the heating by Messrs. Haden & Sons, of Trowbridge.

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ILLUSTRATIONS.

St. Phillip's Church, Birmingham.

THIS church was carried out from the designs of Thomas Archer, a pupil of Vanbrugh, and was built in 1710. Campbell says it "was justly esteemed as a very beautiful structure." Archer's treatment of the steeple is very different from that favoured by Wren, whose detail was adversely criticised by architects of a later generation.

Queen's House, Greenwich.

THIS work of Inigo Jones, which was completed in 1735, may be held to have suggested the scale adopted in the later additions to Greenwich Hospital.

Australia House, Aldwych, London.

THESE illustrations are given in connection with the article which appears on the next page, where some additional illustrations will be found. We think this building one of the most successful modern designs we remember seeing, both because of its refinement of detail and virile strength and expressiveness, and we believe our readers will endorse our opinion.

MEETING.

THURSDAY, MAY 27.

Institution of Electrical Engineers.—Annual general meeting. 8 p.m.

CORRESPONDENCE.

R.I.B.A. Politics.

SIR,—I regret to learn that there are still politics and party questions disturbing our Institute even at this time when we should avoid all internal dissensions.

I hear that a manifesto has been issued with the object of influencing votes in the cause of a party or clique.

It is to be hoped that all members will do their duty as voters. The composition of the Council is important in the interests of architecture, and those who criticise the Institute's action or inaction have only themselves to blame if they have shirked their duty in electing the Council.

All members should make a point of supporting candidates on their merits, realising that men of standing and ability are the safest guardians of our art and its interests.

ERNEST GEORGE.

Architects' Quantities.

SIR,—It is rather amazing how this matter crops up perennially; and, of course, there is something always to be said for the architect.

In my experience, and in the experience of nearly all the quantity surveyors of my acquaintance, it has been found impossible to turn out a thoroughly good set of quantities unless the surveyor has been in good and constant practice or in training for a period of fifteen years. I have heard ten years mentioned. I, personally, have not found the ten years' man. In the case of quantities being issued and being good by the ten years' man, generally an able assistant is responsible.

So in the case of an architect. He rarely does the work himself, and the value of his quantities depends:—(1) As to whether his architectural work is so meagre that he has been able to devote the requisite number of years to training as a surveyor. (2) He signs the bills of quantities which have been prepared by an assistant. Even if the assistant is experienced he does not feel the same responsibility as an employer surveyor, and the quantities are not generally so good. Also an architect taking his own quantities can and does more easily compound with the builder, not always to the advantage of his clients.

Most country architects take their own quantities, but have either a very experienced man in their employ or compound more or less with the builder, who is generally a man they know and can depend upon.

When it comes to real competition with real quantities an architect would stand no chance.

There is a very important aspect of the case which is generally ignored and forgotten. It is this: That in almost all cases in which quantities or builder's accounts have been fought out in the law Courts the issuer of the bills or accounts was either (1) an architect, (2) a clerk or employee of the architect, or (3) some inferior surveyor who has shared the fees with the architect. I cannot call any modern case to mind where the quantities or accounts were issued by a first-class quantity surveyor. It would not do to mention the cases; it is better not to open old sores.

We who have been engaged in such cases know, and have heard the judge's remarks, often to the detriment of those who have issued the quantities or accounts. This, I am sorry to say, is not always clear in the reports made, even by the building papers. In some cases, unless I had known, the papers would not even have conveyed the real judgment to my mind.

In one well-known law case lately, there were on one side about seventeen witnesses, nearly half of whom were architects (some of the R.I.B.A. Council) and three or four quantity surveyors; on the other side one architect and two surveyors, who won the case. The architects without exception most honourably said in effect:—"We know nothing about valuation; we leave that to our surveyors."

The inference is that high-class architects will not touch quantities and accounts; that this work is only attempted by those of inferior practice. ANOTHER QUANTITY SURVEYOR.

Domestic Hot-Water Supply.

SIR,—In reply to "Efficiency" in last week's *Builder*, it has oftentimes been asked, Why not connect cold supply direct on to main? Also it has been stated many times that there should be three pipes to the boiler, viz., cold supply and the two circulating pipes, and that it is a common error to bring cold water into the cylinder or hot tank every time water is drawn off.

The reason why it is necessary to have a cold tank connected with the main by a ball cock, and not as suggested, is evident, because if connected direct to the main the expansion pipe would overflow. If not connected at all there would be no fresh supply to make good the loss as cistern empties, but being connected by a ball cock the water is kept at approximately a constant level while under pressure, although in the case of an intermittent service it may happen that the cistern is emptied and no more hot water can be drawn. My own opinion is that taking the cold water direct to the boiler as suggested above might sometimes lead to serious results, because if the system had been standing idle for any length of time and a good fire going (the boiler possibly being furred up) the metal might be approaching red heat.

If, then, hot water were drawn off and the cold came suddenly into the boiler it might crack the scale and reach the metal and most likely cause explosive results.

There is no doubt, to my mind, that the most approved method is to connect the cold supply to the bottom of cylinder or hot tank. As regards the necessity for a supply tank with ball cock, etc., there is no question but what same is necessary. H. PETER HING.

Birmingham.

SIR,—In reply to your correspondent, a very good reason for using a cistern in connection with the hot-water service is to ensure a constant supply of water when the main is closed down for any purpose.

To supply the service direct from the main, involving the impossibility of having open-air pipes, would add to the dangers already inseparable from the hot-water system, to an extent which precludes the idea from becoming fashionable.

The only object attained in "laying on the main to sinks" is in the supply of fresh water for drinking purposes.

S. WHITMORE ROBINSON.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, S.W., Mr. Cyril Jackson, Chairman, presiding.

Tenders.—Tenders were received for (1) the supply of proto-sulphate of iron, and (2) lime for the Barking and Crossness Outfall Works.

Loans.—Sanction was given to the borrowing by the Stepney Borough Council of £155 for purchase of property for a street improvement; £573 for purchase of property for street improvement; and £275 for purchase of property for street improvement.

The Valuer of the Council.—It was agreed, on the recommendation of the General Purposes Committee, to promote Mr. F. W. Hunt, the Chief Assistant-Valuer of the Council, to the office of Valuer of the Council at a salary of £1,500 a year, rising to £1,800 by instalments of £100 every two years, the first instalment becoming due on April 1, 1917.

Ardwick Green Industrial School.—The Education Committee reported that they have received a letter from the Manchester Industrial Schools Committee, accepting the grant of £10,000 offered by the Council towards the cost of the erection of a new industrial school at Cheadle Hulme, near Manchester, to replace the Ardwick Green Industrial School. The Committee state that they are very grateful to the Council for its generous promise of assistance, which enables them to consider the scheme practically assured of success after the present national crisis has passed.

Wood-lane and Old Oak-road, Hammersmith.—On the recommendation of the Improvements Committee it was agreed that, subject to no expenditure being incurred by the Council during the continuance of the war, the Council is prepared to enter into an arrangement with the Ecclesiastical Commissioners in order to secure that, on the future construction of a road in Hammersmith between Wood-lane and Old Oak-road at the county boundary, the width of the road shall be 100 ft. instead of 50 ft., and to be considered part of an arterial road leading westward out of London.

Survey of London.—The Council agreed that Vols. VII. and VIII. of the series of volumes of the survey of memorials of Greater London shall deal with Chelsea Parish Church (Parish of Chelsea, Part III.) and the Parish of St. Margaret, Westminster, respectively.

Isle of Dogs Pumping-Station (Enlargement).—Gas Engines.—The Main Drainage Committee recommended that payment not exceeding £1,000 be authorised to the Premier Gas Engine Company, Ltd., in respect of the supply, delivery, and erection of two gas engines at the Isle of Dogs Pumping-station, subject to the completion and delivery of certain tanks included in the contract and to the interests of the Council being safeguarded. This was agreed to.

FIFTY YEARS AGO

Competitions.

Covering in Area, Abbey Ruins, Reading.—The Committee appointed to obtain designs for the above have selected that submitted by Messrs. Wm. & J. T. Brown. The competition was confined to local architects. The dimensions of the building will be 160 ft. by 90 ft.

[*** We give the above extract from the *Builder* of May 20, 1865.]

CONSTRUCTION SECTION.

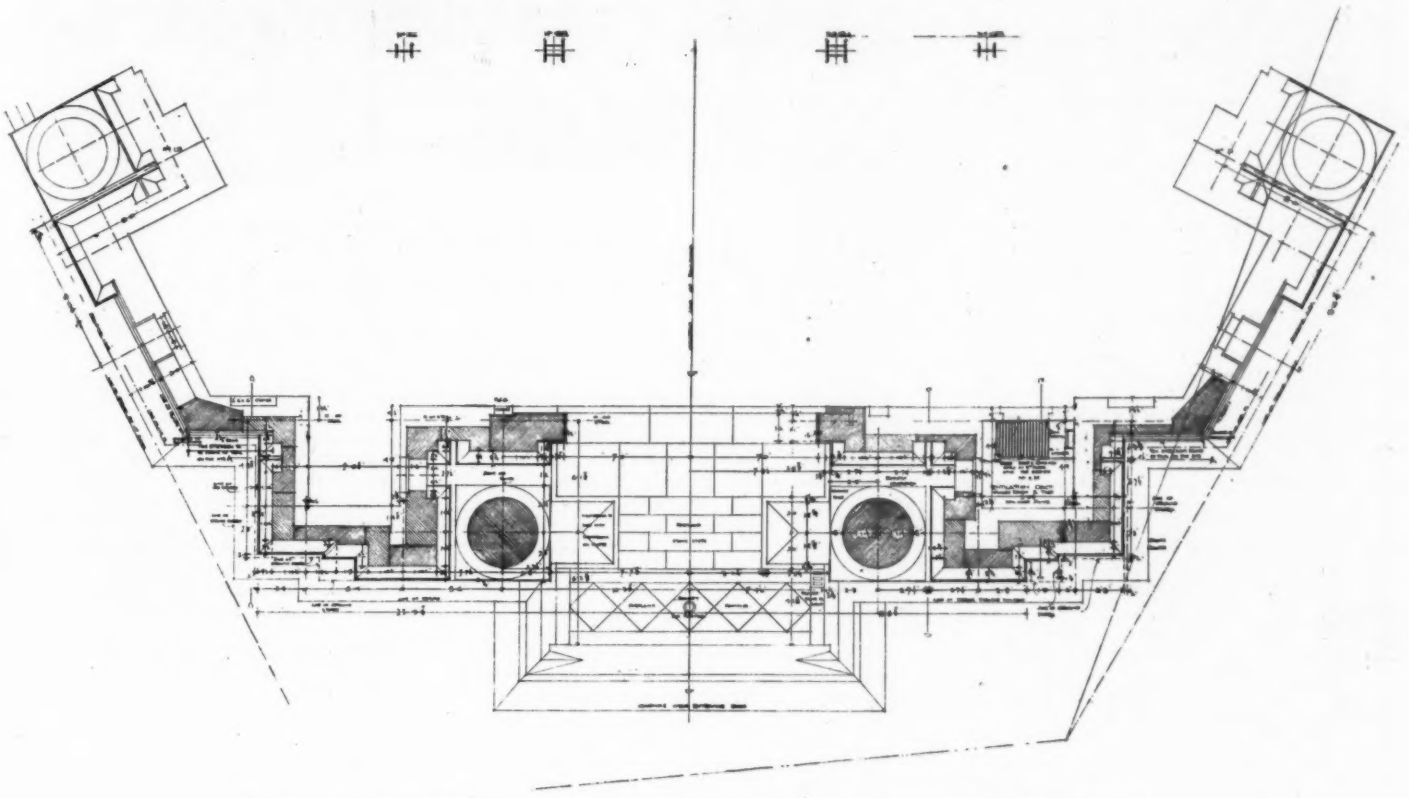

Fig. 1. Australia House: Plan of Stonework, East Corner, First Floor Level.

AUSTRALIA HOUSE, STRAND.

THIS fine building, which occupies the island site bounded by the Strand, Aldwych, and Melbourne-place, contains some very interesting features both as regards its architectural treatment and the construction employed. The architects are Messrs. A. Marshall Mackenzie, F.R.I.B.A., and A. G. R. Mackenzie, F.R.I.B.A., and the building shows a bold and successful treatment both in plan and elevation which is worthy of the position and object of the building. The site is practically triangular on plan, and the three frontages are about 190 ft. long, with the apex cut off where the Strand and Aldwych frontages converge to give a fourth frontage about 40 ft. wide, wherein the main entrance is situated. There are six floors above the ground floor, giving a height of about 100 ft. from the pavement level to the main roof, and, in addition, there are two floors below, viz., an upper and lower basement floor, and these are 11 ft. 6 in. and 10 ft. high respectively. The ground floor, which has a height of 30 ft. 6 in. to the first floor level, is planned with the principal entrance in the short frontage between the Strand and Aldwych, as mentioned above, this being 12 ft. wide and leading into a vestibule from which access is had to a hall about 30 ft. square. Immediately adjoining the latter are two large lifts and the principal staircase, which is planned on the "two-way" principle. Behind the main staircase a fine exhibition hall is situated, this extending through the remainder of the plan to Melbourne-place, with direct entrance and exits to same. This hall is about 64 ft. wide and about 88 ft. long, and it has a semicircular recess about 15 ft. deep on each side, which are important features in the apartment. The greater part of the frontages to the Strand and Aldwych is reserved for shop premises having a depth of about 35 ft., and a portion at the corner, between the Strand and Melbourne-place, is occupied by the Victoria Government offices, which were erected some time ago from the designs of Mr. Alfred Burr, F.R.I.B.A. A large reading-room and library are provided on the first floor, and the High Commissioner's room, which is nearly 50 ft. long, is also situated on this floor over the entrance vestibule. The remainder of this floor will be subdivided as required for various departments and offices. These two principal floor plans are illustrated, together with a section of the building where the various levels are shown. The whole of the upper floors will be available for letting purposes. The building has been constructed as a fire-resisting, steel-framed structure, and the whole of the work complies with the requirements of the London County Council's General Powers Act, 1909, as regards the design and protection of the steel and the thickness of the walls. An accurate site plan was made before the preparation of the plans was commenced, and the contractor was supplied with a complete dimensioned column plan to ensure accuracy

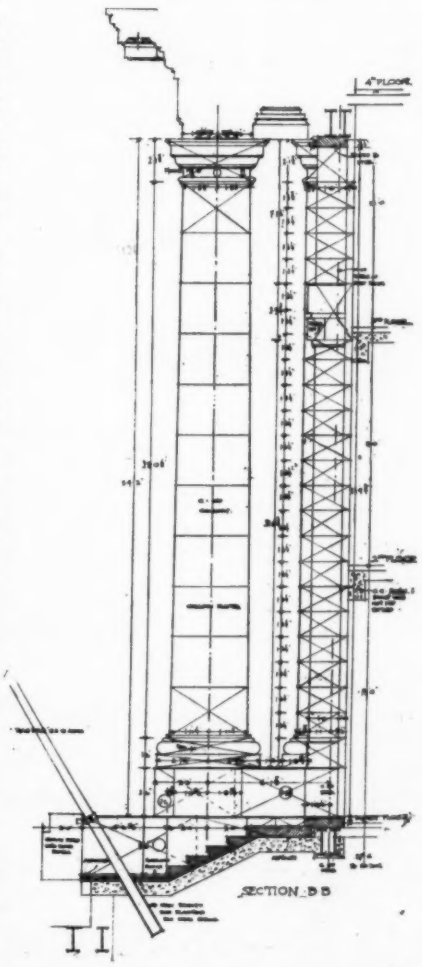

Fig. 2. Section at East Corner, Lower Part.

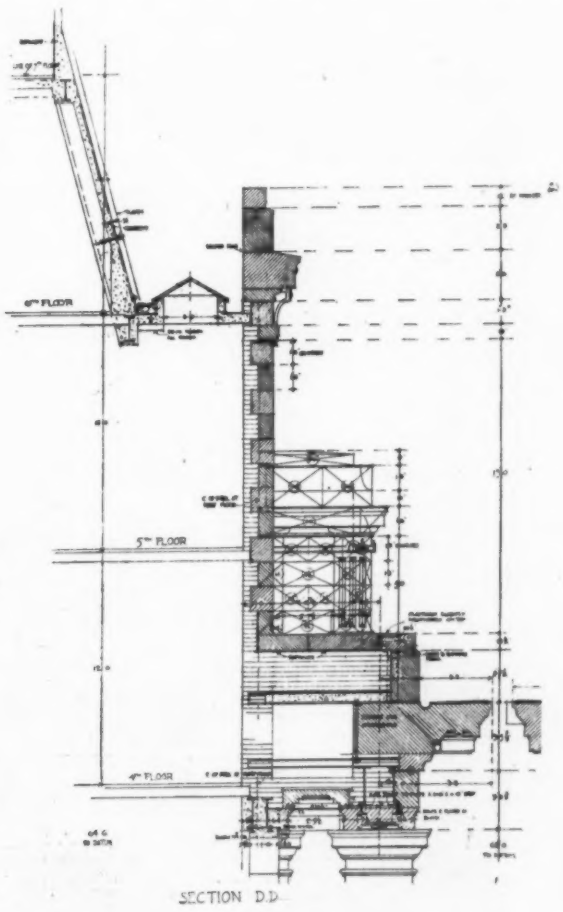

Fig. 3. Section at East Corner, Upper Part.

Australia House.

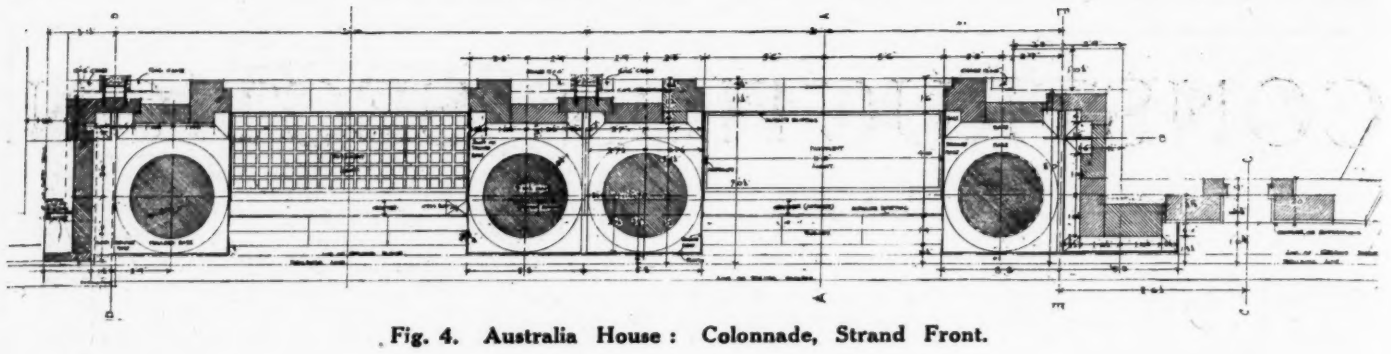

Fig. 4. Australia House: Colonnade, Strand Front.

in the initial setting-out. The lay-out of the stancheons is somewhat irregular in portions on account of the shape of the site, but the supports were spaced uniformly in all cases when possible. Those occurring next the Strand and Aldwych fronts are spaced at about 22-ft. centres, and a second row parallel to these is placed 21 ft. away, thus giving bays which are approximately 22 ft. by 20 ft.

Four stancheons occur in the interior of the large exhibition hall, but they are covered by the architectural treatment, which in every case governed the lay-out of the supporting members. The foundations were constructed of reinforced concrete, and complete detailed drawings of this were supplied to the contractor. Great care was taken in the design of the foundations to prevent any unequal settlement, and some very heavy loads had to be carried. To comply with the requirements of the General Powers Act the steelwork was coated with cement wash after erection, but in most cases the wash was of very little use, as it did not offer sufficient protection against external agencies, and scaled off before the casing was applied. The steelwork was exposed to the weather for a considerable time owing to the delay caused by the builders' lock-out, and it is interesting to note that this exposure caused the mill scale to be completely removed, similar to the custom employed in shipbuilding work. Before the work was cased with the protective concrete it was thoroughly scraped and cleaned, and the whole of the steel was then covered with broken brick concrete mixed in the proportions of 1, 2, and 4, this concrete being held in position by steel wiring, having a diameter of $\frac{3}{16}$ in. The only steelwork that was painted is that in the external walls, and there is no doubt that the methods employed are the most reliable for protecting the work against corrosion and fire. Rivets were used in all possible cases in the erection, but when these were not possible machined and turned bolts were employed, and the holes were rymered out in position after the parts had been erected. The ground floor and upper basement are designed to carry heavy superimposed loads for exhibition purposes and shops, and they are constructed of reinforced concrete with short spans. The upper floors, which are designed for office accommodation, are constructed with reinforced concrete and hollow bricks, the usual span being about 22 ft. and the maximum 32 ft. The flat and sloping roofs are also in reinforced concrete, and there are three staircases which have been executed in the material, two of which are self-supporting and built in conjunction with ventilation shafts. Complete detailed drawings of every portion of the work were supplied to the contractor, and the steelwork has been inspected, both as regards quality of material and workmanship, as the work proceeded by a resident inspector.

Some interesting details are provided in the stonework construction, and a few typical examples are illustrated here. The plan in Fig. 1 shows the stonework at the first floor level, through the colonnade at the east corner over the principal entrance. The shafts of the columns are 28 ft. high and these are fluted and have a diameter at the bottom of 3 ft. $10\frac{1}{2}$ in., reducing to 3 ft. $4\frac{1}{4}$ in. at the top. They are free-standing columns, with moulded caps and bases, as shown in the section illustrated in Fig. 2. The beds of the stone vary considerably according to the shape and position, but the ordinary plain-faced work has a thickness of $7\frac{1}{2}$ in. and 12 in. generally in alternate courses, and a good bond is obtained. Special stones about 4 ft. long are provided at the external angles, these having a maximum width on plan of about 1 ft. 10 in. Trachyte, from Australia, has been employed for the plinth, and in certain positions on the ground floor, but the remainder of the work is of Portland stone. The space between the columns at the east corner has been utilised to form a balcony at the first floor level, and this is provided with Portland stone steps and paving of similar material. A section through the upper part of the east corner is given in Fig. 3, and the method of supporting the main cornice and entablature is shown. The cornice has a depth of 3 ft. $5\frac{5}{8}$ in. and a projection of about 3 ft. 8 in., and of this the bed mould is formed with small separate stones, and the upper portion consists of large stones, each 7 ft. by 2 ft. 6 in. in section, with lengths of 2 ft. 6 in. and 2 ft. 9 in. on elevation. Steelwork is provided in the entablature, which is built up as shown, the soffite being suspended from the bottom flanges of the steel joists and the frieze being bolted back to the web. The cornice is tailed down by bolts at the back,

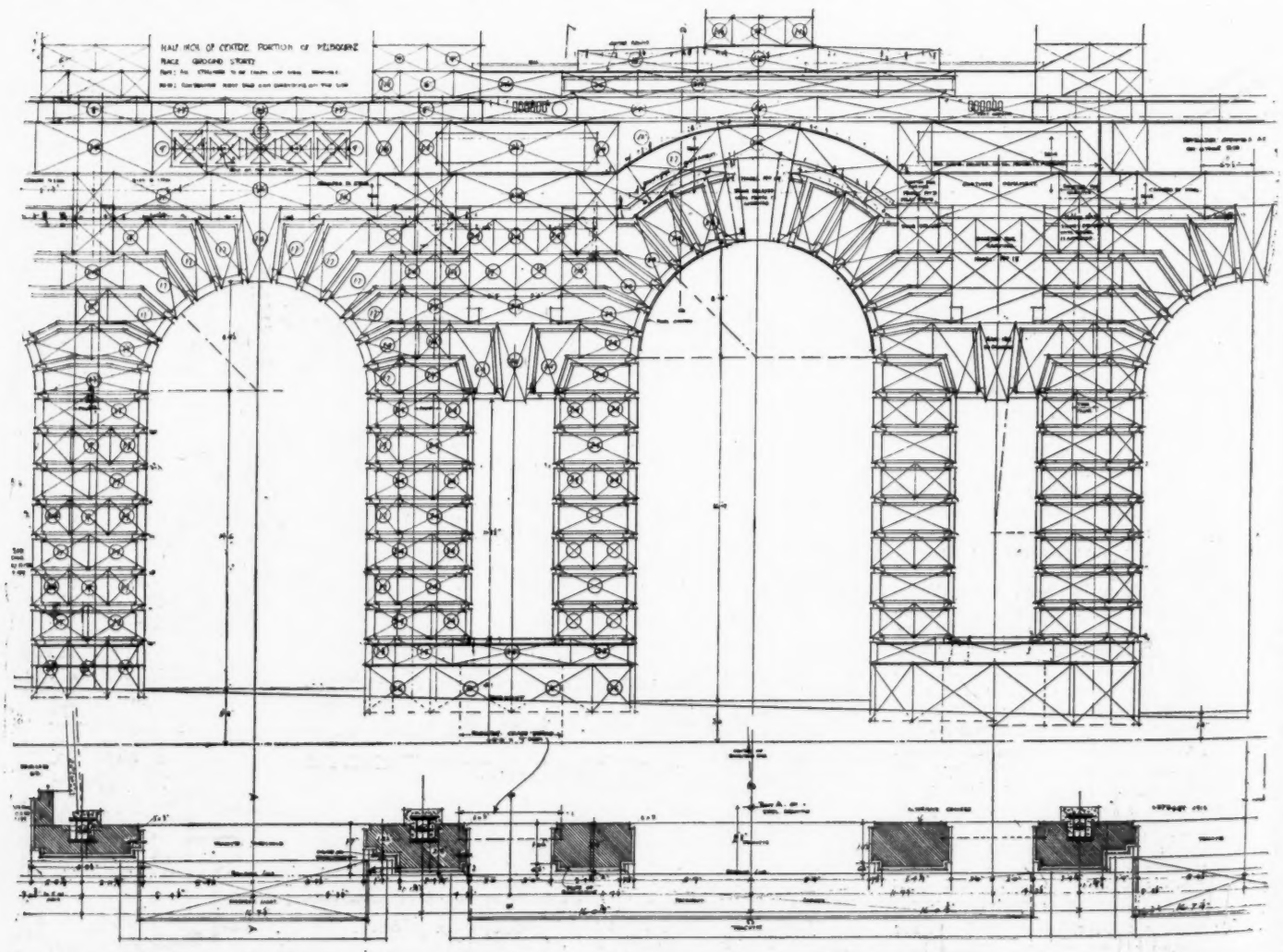

Fig. 5. Australia House: Arched Openings in Melbourne-Place.

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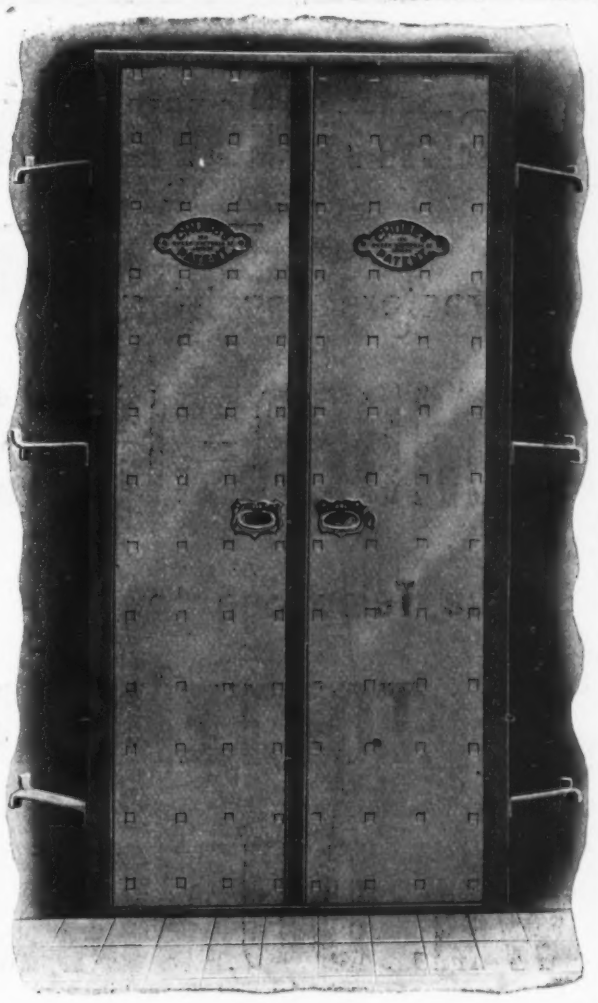

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which pass through the top flanges of small joists, placed at about 2 ft. centres, running back to the wall enclosing the fourth and fifth floors, and, in addition to this anchorage, a certain amount of weight is brought immediately on to the top of the cornice at the back. The construction of the sloping roof enclosing the sixth floor and the work adjoining is also shown in this section. A portion of the colonnade at the first floor level of the Strand front is shown in Fig. 4, and the arrangement of the stonework at this point can be seen. The details in Figs. 5 and 6 show the stonework on the ground floor in the centre of the Melbourne-place frontage, the arched openings being those which lead into the large exhibition hall. It will be seen that some large stones were employed, and the treatment is very bold.

With regard to the finishings and decorative treatment generally, it is interesting to note that all the timbers and marbles come from Australia, and their successful application to this building is eloquent of the resources of the country, and should lead to a more extensive use of such materials in London. The vestibule walls are to be covered with stuc, and the walls of the rotunda and exhibition halls, together with the columns and pilasters, are to be in Buchan marble. Panels are to be formed in the upper portions of the walls to hold paintings by Australian artists, and the floors will be paved with light Caleula and Buchan marbles. An open vista will be obtained through the vestibule, rotunda, and exhibition hall to Melbourne-place, and the effect will be a most successful one. The main staircase is being executed with Australian marble treads, risers, and dado, and the upper part of the walls will be finished in stuc. The High Commissioner's rooms and the reading-room, on the first floor, will be panelled with black bean, the former having columns, pilasters, and chimney-piece of Greenstone, and the latter having columns and pilasters of dark Caleula marble. The furniture for these rooms and the various Commonwealth offices is being made in Australia from designs by the architects. The corridors on the first floor have white Angaston marble walls and floors.

The window-frames to the first, second, and third floors facing the Strand and Aldwych are executed in bronze, and those to Melbourne-place in cast-iron. The main entrance at the eastern corner will be rendered very striking, as it will be flanked by groups of sculpture, while above the main cornice there will be a bronze group.

An artesian well was sunk for the purposes of the water supply and a storage tank of 30,000 gallons capacity is provided on the roof. The chief contractors for the work were:—

General Contractors.—Messrs. Dove Brothers. *Foundation Work.*—Messrs. Holloway Brothers (London), Ltd. *Steelwork.*—Messrs. Redpath, Brown, & Co. *Heating.*—Messrs. Richd. Crittall & Co. *Electrical Work.*—Messrs. Higgins & Griffiths. *Lifts.*—Messrs. Waygood-Otis, Ltd. *Plastering.*—Messrs. Annan.

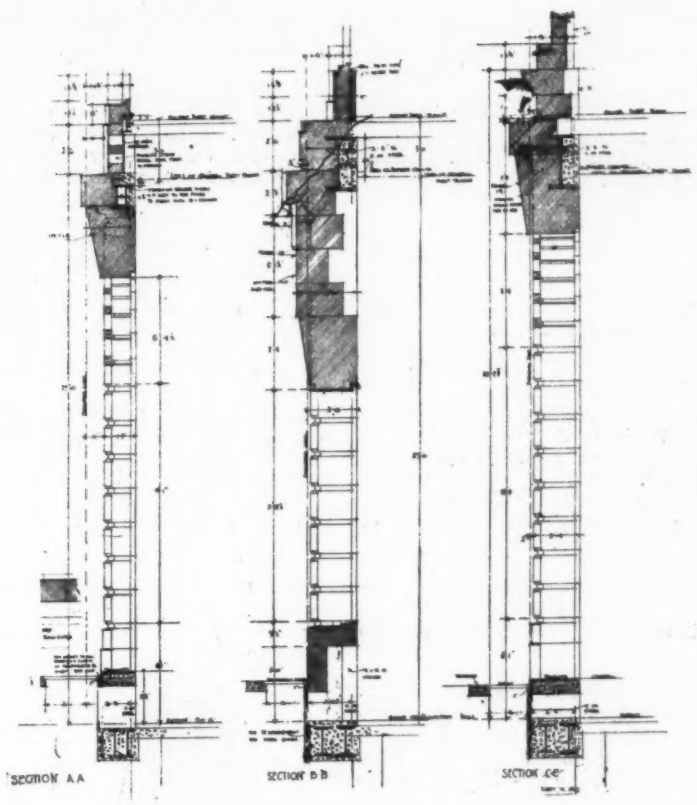

Fig. 6. Australia House: Sections through Arched Openings in Melbourne-Place.

THE CONCRETE INSTITUTE:

THE STABILITY OF QUAY WALLS ON EARTH FOUNDATIONS.

AT a recent meeting of this Institute a paper was read by Mr. F. E. Wentworth-Sheilds, M.Inst.C.E., Vice-President of the Institute, entitled "The Stability of Quay Walls on Earth Foundations," Professor Henry Adams, M.Inst.C.E., President, in the chair.

The following is an abstract of the paper:

"In spite of the large amount of experience which has been gained in the construction of quay walls, it is still one of the most difficult problems in engineering to design a wall on an earth foundation with confidence that it will be stable when completed. A warehouse or a bridge can now be designed not only with the assurance that it will bear its load, but also with a knowledge of its factor of safety sufficiently accurate to satisfy the designer that material has not been wasted. But the same can certainly not be said of a retaining wall on a soft bottom—at all events, not of a wall, say, 40 ft. to 80 ft. high, such as is commonly needed to sustain the quays of a modern dock. Even if the designer of such a wall is assured that it will stand, he cannot with any confidence tell you what factor of safety it possesses. The cause of his uncertainty is of course the difficulty of ascertaining the actual lateral pressure imposed by an earth backing and the actual resistance offered by an earth foundation. His difficulties are thus different from those of the engineer who has to design large masonry dams. The latter structures are invariably placed on a foundation of solid rock, and the designers' chief care is that the stresses in the masonry of which the dam is composed shall not exceed a safe limit. The dock engineer, on the other hand, has to be anxious that his wall shall not move, as a whole, on the comparatively soft material on which such structures have in general to be placed. The object of this paper is to consider the uncertainties and difficulties which the designer of a quay wall has to face, and, if possible, to ascertain how far calculations can assist him, and how far he must trust to judgment based on experience. It is also intended to urge upon this Institute the importance of collecting information upon this subject in the hope that by degrees these difficulties and uncertainties may be cleared away.

A retaining wall may fail as a whole in two ways:—

(1) By sliding forward on its base, and

(2) By overturning.

It may be said at once that as regards quay walls, at least, the former mode of failure (by sliding forward) is by far the more common.

The conditions of stability in a "gravity" wall may be summarised thus:—

The forces tending to thrust the wall outwards (generally the lateral pressure of the earth backing) must be at least equalled by the forces tending to restrain it or thrust it inwards. The latter forces are generally the pressure of the water under it and in front of it, the resistance of the earth in front of its toe, and the horizontal resistance to shear (or the friction) at the base of the wall. If these horizontal forces balance, the wall cannot slide forward.

The resultant of the outward forces, however, is almost always at a higher level than the resultant of the inward forces. Thus a couple is formed tending to overturn the wall about its toe. This couple induces a counter-couple tending to keep it upright. The forces forming this counter-couple consist, on the one hand, of the weight of the wall acting vertically downwards, together with the weight of any earth or water which may lie above the base of the wall, and, on the other hand, the upward resistance of the earth under that base. If the upward resistance of the earth beneath the wall is capable of forming with the downward weights a couple at least equal to the overturning couple, the wall cannot overturn.

In order that the earth beneath the wall shall be capable of forming this righting couple two things are necessary. It is obvious that the centre of the earth's resistance must be forward of the centre of gravity of the wall and of other loads on the base, and generally it is forward also of the midpoint of the base of the wall. Consequently the intensity of upward resistance is generally greatest at the toe and least at the heel. To preserve stability the resistance at the toe must not be greater than the maximum which the earth is capable of offering, and that at the heel must not be less than the pressure induced by the tendency of the earth to rise at this point.

Calculations for the stability of quay walls cannot in our present state be always relied upon, and failures, on the one hand, and waste of material on the other, are liable to occur even to the most careful and experienced designer. This, however, is not saying that such calculations should be entirely ignored. On the contrary, they are most useful in suggesting means for increasing in the most economical manner the stability of designs which are known or suspected to be weak.

The author then dealt with some devices which have been used for increasing the stability of quay walls, namely:—(1) Admission of water into dock; (2) sinking foundations deeper; (3) building buttress walls in front on main wall; (4) making wall wider; (5) removing a portion of the backing; (6) improving backing; (7) sloping base of wall; (8) driving piles under base; (9) anchor ties; (10) lengthening toe.

In conclusion, it may be said that, owing to the difficulty and expense of making experiments on large walls, it is the more important that careful records should be kept and published of both successes and failures in this class of structure. Such records should include not only dimensions of the wall and careful notes as to the nature of the materials employed, but also the calculations for stability, with the formulæ used, the assumptions made for the values of constants in those formulæ, and the reasons for such assumptions.

It is of course unlikely that it will ever be possible to design large quay walls purely from rules and without some measure of judgment, but if a body of information as suggested above could be collected and analysed, it would help and clear away some of the uncertainties which now beset that interesting though troublesome problem, viz., the most economical design of high quay walls on earth foundations."

The reading of the paper was succeeded by a discussion, in which the following took part:—

The President; and Messrs. Charles F. Marsh, M.Inst.C.E.; Morgan E. Yeatman, M.A., M.Inst.C.E.; Dr. J. S. Owens, B.A., A.M.Inst.C.E.; S. Bylander; W. G. Perkins, District Surveyor for Holborn; W. A. Green, M.A., B.Sc.Eng., A.M.Inst.C.E.; Percy J. Waldram, F.S.I.; J. Ernest Franck, A.R.I.B.A.; and F. E. Wentworth-Sheilds, M.Inst.C.E.

The following was elected a member of the Institute :—Mr. F. Broadhurst Hamilton, A.M.I.Mech.E., Westminster.

It was announced that the following had been admitted by the Council as a student of the Institute :—Mr. T. E. Dodds, Hons.B.Sc.Eng.(Lond.), Wh.Sc.

The paper by Mr. E. A. W. Phillips, M.Inst.C.E., M.C.I., entitled "Lime Concrete in the East," which was to have been read on May 6, will be read on May 22, at Denison House, Westminster, S.W. It has been decided to abandon the fifth annual dinner this year.

CONSTRUCTION NOTES.

What Does Cost Accounting Mean?

It was brought out in the discussion before the Boston Society of Civil Engineers of a paper read by Mr. Leslie H. Allen, of the Aberthaw Construction Company, Boston, that on one construction job the head of the accounting department of the owner decided what accounts must be kept on construction work. As these were useless for giving any information to the engineers, the latter found it necessary to keep separate cost data by operating an independent set of books while the job was in progress. This is stated to be typical of the narrow ideas of the old-fashioned accountant, to whom the figures are an end in themselves rather than merely a means to the end of reducing costs. It is obvious, of course, that the idea is to make the accounting structure exactly parallel actual work in the field, the same way that the cost accounting structure in the factory should follow their departments and their operations.

Fastening Studding in Concrete.

A method of fastening wood studding directly to concrete foundation walls consists in the use of an embedded metal socket in which the studding is inserted. These studding sockets are made of cast iron, and there are several types of them on the market. They are, however, a comparatively recent invention, but have won recognition on their merits, as they eliminate all the old-time troubles connected with this detail of making a durable and firm connection in framing wooden members into concrete walls. The old method of bolting a sill to the wall, in the construction of a corn-crib, for example, has not proven a thorough success, in that as soon as the sill decays or rots—which does not take long—the whole side wall of the crib can be seen to be bulging outward and spilling its golden treasures over the surrounding ground. These sockets are set into the green, soft concrete when the wall is being laid. They have long claws so that they firmly grip into the concrete, with the result that one has a permanent post support. The ends of the studding will not decay when set into these sockets, as provision is made so that any moisture which collects can drain out of the bottom of the socket. A nail-hole in the casting makes it possible to spike the studding securely in place. This method has solved, to a great extent, one of the greatest problems in the construction of concrete floors and foundations for farm buildings.—*Contract Record.*

A New Engineering Medal.

Mr. Leonard C. Wason, President of the Aberthaw Construction Company, Boston, who has been elected President of the American Concrete Institute, has offered a new prize to be awarded annually by the Institute to the author of the best paper submitted to the Institute during the year. Competition is restricted to members, and the papers must be original in every respect and not previously published elsewhere. All papers submitted to the Institute for publication in the annual volume are eligible to this competition, but the Board has the privilege of withholding the medal any year in which no papers of sufficient merit are presented.

A NEW SHOWCASE.

Messrs. Evered & Co., Ltd., 30-35, Drury-lane, W.C., and Smethwick, the well-known brassfounders and ironmongers, have arranged a most useful device by which architects may examine the effect of a large selection of fittings with the least possible waste of time and trouble. Choosing from catalogues, even when they are illustrated by good photographic views, is unsatisfactory, as it is difficult to judge correctly of their effect when fixed. Looking over a number of samples pulled out and unwrapped one after another is equally confusing, as no adequate comparison between different samples is possible. Messrs. Evered's new showcase, by which door and window fittings, finger-plates, knockers, and every sort of ironmongery required by architects can be seen fixed in position to a proper background, meets the difficulty. The device consists of a case in which the various fittings are fixed to wooden boards, which are pivoted at top and bottom, so that they can be turned in any direction. Fittings are fixed to each side of the slide, so that by the inspection of a moderate-sized case every sort of fitting required in a building can be seen attached to a suitable background.

We reproduce from a large number of fittings a few representative designs of the excellent work for which this firm has a well-deserved reputation, but architects will find practically every type of fitting they may require among the large assortment in Messrs. Evered's Drury-lane showrooms, and the showcase invented by the firm for showing them will save architects much of the trouble involved in making their selection.

NEW COMPANIES.

The undermentioned particulars of new companies recently registered are taken from the Daily Register compiled by Messrs. Jordan & Sons, Ltd., Company Registration Agents, Chancery-lane, W.C. :—

Joseph Briscoe & Son, Ltd. (140,204). Registered May 5. To acquire business carried on by J. Briscoe, at Stockport, and to carry on business as roadmakers, paviors, builders, contractors, engineers, electricians, etc. Nominal capital, £2,000 in £1 shares.

Hemlingford Estates Company, Ltd. (140,199), 140, Strand, W.C. Registered May 5. To carry on business of house, land, and estate agents, builders, contractors, decorators, brick-makers, etc. Nominal capital, £1,000 in 500 £1 Preference shares and 500 £1 Ordinary shares.

"Perfecta" Boiler Circulator, Ltd. (140,207), 25, Victoria-street, Westminster. Registered May 5 as ironfounders, mechanical engineers, manufacturers of machinery and tools, builders, electrical engineers, and to acquire benefit of certain inventions in relation to improvements in the circulation of fluids in boilers. Nominal capital, £2,000.

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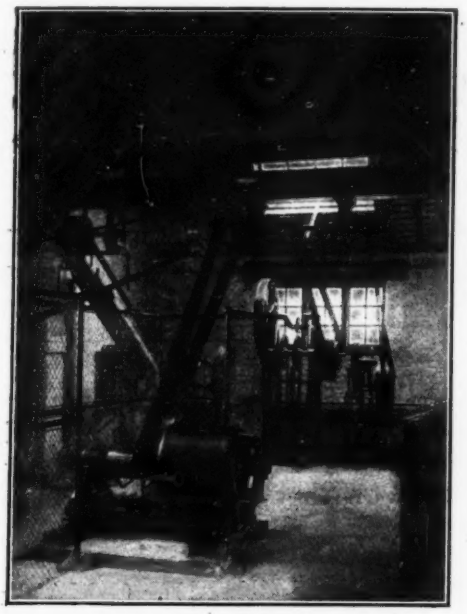

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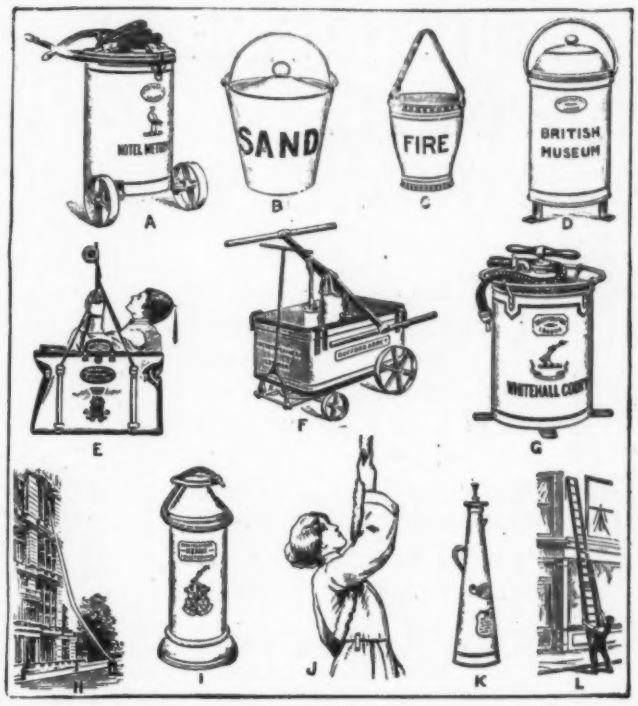

(A) Corridor Hand Pump. (B) Fibre Bucket for Sand. (C) Leather Fire Bucket. (D) Brigade Hand Fire Pump. (E) "Kitbag" Fire Escape. (F) "Universal" Manual Fire Engine. (G) Double Power Hand Fire Pump. (H) "Chute" Fire Escape. (I) Hand "Kemik" Fire Engine. (J) Fluffy Rope Fire Escape. (K) "Taper Top" Chemical Fire Extinctor. (L) Portable Extension Ladder.

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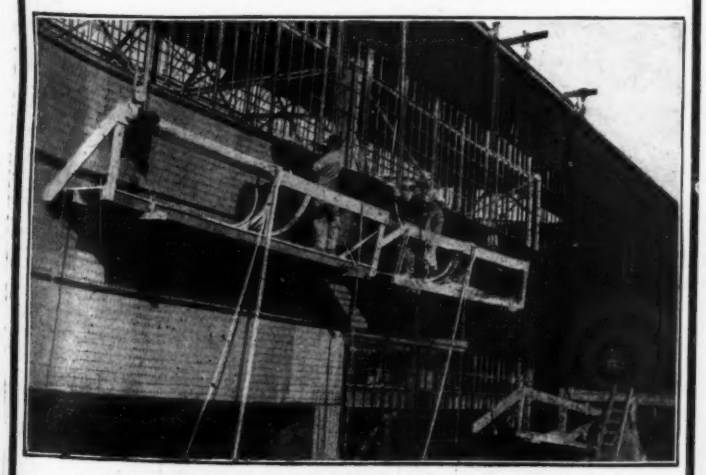

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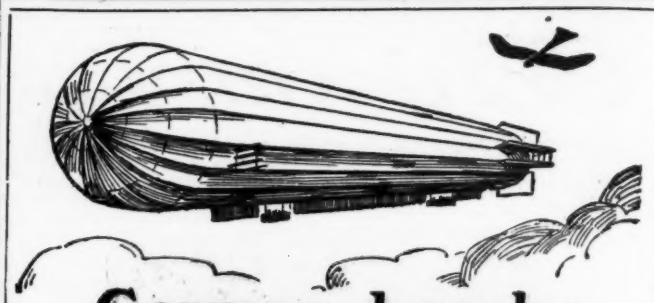

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THE BUILDING TRADE.

THE LONDON MASTER BUILDERS' ASSOCIATION.

TWO meetings of the Council were found necessary during the month of April to deal with the urgent and important matters which demanded attention.

The Burden of War.

The conference with the various trade societies which was referred to in the previous Report as being probable was held on April 22, when all the operatives' societies with whom the Association has working rules were represented, excepting the plumbers, who made no application for representation. (The result was reported in our issue of April 30.)

Organisation.

The latest Report of the Organisation Committee, which met on April 12, was brought up and, with some slight modifications, was adopted and recommended to be submitted to the members of the Association at a special general meeting to be held next month. Three principal points are dealt with in the recommendation, viz. :—(1) Method of raising subscriptions, (2) democratic control, and (3) increase of definite advantage of membership. The late dispute in the building trade has shown conclusively the real strength of this Association. In many other ways, such as negotiation with public bodies, etc., in respect to matters of the greatest interest and importance, not only to members of the Association, but to the trade generally, the value of an influential organisation has been proved beyond doubt. As an instance, steps have been taken to obtain a conference with the London County Council in respect to dealing with the question of increased cost of building materials, cartage, etc., owing to the war, and it is hoped that a satisfactory result can be reported at an early date.

Conciliation Board Proceedings.

In a recent case the plumbers claimed the right to do certain work which was being done by the smiths and fitters, and ultimately the plumbers struck the job. The matter in dispute was submitted to a Joint Conciliation Board, in accordance with the working rules, and was attended by representatives of each party. The plumbers' representatives, after protesting against the meeting being held, retired from the Board, and the following resolution was carried :—"This Board determines that all work in connection with hot or cold water supplies, domestic or otherwise, in which iron, brass, copper, or other similar hard metal piping is used, may be executed either by smiths and fitters or by plumbers at the discretion of the employer." The smiths and fitters then retired, and the following resolution was passed by the employers :—"That notwithstanding the fact that it was contended by the plumbers that the strike arose in connection with a sub-contractor, we, the employers' side of this Board, consider the action of the plumbers in ceasing work before the matter had been brought before a Conciliation Board constituted a breach of Rule 14." The ultimate result was that the employer arranged with the Government Departments concerned to complete the work in steel pipe in lieu of lead pipe, thus dispensing with the services of the plumbers.

Increase of Prices.

A case in which a tender for carting and supply of certain materials for a specified job was accepted prior to the war, and in which the sub-contractor recently claimed to amend his prices, was referred to the solicitors, and, in their opinion, this offer and acceptance constituted a "contract which the sub-contractor cannot repudiate." The Council think the question of sufficient importance to justify them in taking further steps in the interest of members, and a circular letter has been issued asking for further specific instances and particulars of similar action on the part of sub-contractors.

Daywork Charges.

A deputation attended at the Surveyors' Institution on April 16, and had the opportunity of laying the views of the Association before a strong Committee of the Institution, comprising many of the best-known surveyors in the metropolis and from the provinces. The many increased burdens laid upon builders by recent legislation, and the consequent necessity for an increased percentage on daywork was pointed out, and the value of an agreed flat rate strongly urged. The decision of the Institution has not yet been received, but the deputation felt that its views had met with sympathy.

Association Roll of Honour.

Several members of the Council have been for some months engaged in their duties as officers in His Majesty's forces. It is also known that many members of the Association are either actively engaged or have relatives serving in the Navy and Army. It is thought very desirable that a record should be kept of such cases, and members are invited to forward the names to the Secretary, and also any particulars which may be considered of interest. He would be glad also to have the names of those serving in the various auxiliary forces and as special constables, with a view to publication in the next monthly Report.

THE NORTH-WESTERN FEDERATION OF BUILDING TRADE EMPLOYERS.

WE take the following from the April Report :—

Organisation.

During the month general meetings have been attended at Rochdale, New Mills, and Knutsford. At the request of the Lymm builders the President and Secretary attended a meeting at Lymm on April 20, when they were informed that the builders in Lymm had decided to form an Association to cover Lymm Urban District Council area, and application was made to be affiliated to the Federation.

Arrangements have been made to attend meetings at Buxton, Todmorden, Penrith, Keswick, and Rawtenstall during May.

A conference of Presidents and Secretaries of local associations was held at the Exchange Hotel, Manchester, on April 22, and was very successful, seventy-six representatives being present from forty-six associations.

Protection of Members against Unfair Conditions.

The Middlewich Association submitted the following question to the Administrative Committee :—"If tenders are invited or advertised for any work, the site of such work being outside the area of any local association (quantities not being supplied), would it be in order for our members to tender for such work in competition with firms who are not members of any local association ?"

The Secretary reported that he had replied as follows :—"If you have adopted the Model Rule No. 50 your Association should carry it out. If the job referred to is outside your area, I should be pleased to know the name of the architect, so that he may be approached with a view to amending his conditions. Lots of similar cases have in the past been settled to the advantage of our members all over the Federation area. If in case we cannot get the architect to supply quantities, your Association should persist in their refusal to tender, which is the only way to convince outside authorities that times are changed." The Secretary's action was approved by the Committee.

It being reported that estimates were being asked for the New Inn for the North Cheshire Brewery Company at Whaley Bridge without quantities being supplied, it was resolved to support the New Mills Association by refusing to tender until quantities were issued.

After reviewing the condition and quantities for Almshouses at Rawtenstall it was resolved to recommend the Rossendale members not to tender, as the architect was sole arbitrator and the quantities were not satisfactory.

The Secretary reported that he had taken up a case with a Wigan architect, with the result that his conditions had been made satisfactory. The architect in question had decided not to charge £1 1s. for details; that 10 per cent. should be held as retention money instead of 15 per cent.; and that 5 per cent. should be added for the builder on P.C. sums and provisional items.

It was resolved to support the Alderley Edge and Wilmslow Association in their refusal to tender for demolition of existing buildings and the erection of cottages at Wilmslow until proper plans, specifications, and quantities had been supplied.

ROCHDALE AND DISTRICT MASTER BUILDERS' ASSOCIATION.

THE annual dinner of this Association was held at the Freemasons' Hall, Oldham-road, Rochdale, on Monday evening, April 19.

The President (Mr. Thos. Wilkinson) was in the chair, and there were about sixty people present, including local architects and the President and Secretary of the North-Western Federation of Building Trade Employers.

Prior to the dinner a general meeting had been held, at which was presented the twenty-third annual Report of the Association, showing that the total membership is now ninety-four, as against eighty-two for the previous year.

One outstanding feature of the Report was the encouragement given to the apprentices studying building construction and kindred subjects in the building trade. Mr. Thos. Howarth had marked his year of office as President by giving the sum of £5 5s. to the Committee of the Technical School to provide prizes for successful students in these subjects, and the newly-elected President (Mr. Wilkinson) stated at the meeting his intention to do likewise.

NEW MILLS AND DISTRICT BUILDING TRADES EMPLOYERS' ASSOCIATION.

THE second annual general meeting of this Association was held at the Railway Hotel, Whaley Bridge, on April 21.

Mr. Jas. Williamson, the retiring President, was in the chair, and, in the course of an interesting address, gave a hearty welcome to the President and Secretary of the North-Western Federation of Building Trade Employers, who afterwards addressed the meeting.

Mr. Humphreys, Secretary of the Association, read a highly satisfactory Report, in which it was stated that, in addition to increasing their membership from thirty-five to forty-four, they had been successful in coming to terms with the local quarry owners, who had now decided to give 15 per cent. preference to the members of their Association.

LYMM BUILDING TRADES EMPLOYERS' ASSOCIATION.

A GENERAL meeting of employers in Lymm was held at the Plough Hotel, Lymm, on Tuesday evening, April 20. The North-Western Federation of Building Trade Employers was represented by its President and Secretary.

It was stated that six of the leading employers in the district had decided to form an Association to cover the Lymm Urban District Council area.

The objects and aims of local associations were fully discussed, and it was resolved that the Association become affiliated to the North-Western Federation.

Mr. J. H. Holt, of Lymm, was appointed President and representative of the Association on the Executive Council of the Federation, and Mr. H. Thomason, Park Vale, Oughtrington, was elected Secretary.

It was resolved to have a further meeting to discuss rules and daywork prices for the district.

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur :—

——	Masons.	Brick-layers.	Car-penters, Joiners.	Plas-terers.	Slaters.	Plum-bers.	Painters.	Masons' La-bourers.	Brick-layers' La-bourers.	Plas-terers' La-bourers.
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Aberdare	9	—	9½	9½	—	9	8	6½	6½	6½
Accrington	10	9½	9½	9½	9	9	9½	6½	6½	6½
Altrincham	9½	10	10½	10	8½	10	9	6½	6½	6½
Ashton-under-Lyne	10½	10½	10	10½	9	10	9	6½	6½	6½
Barnsley	9½	9½	9½	9½	9	9	8½	7	7	7
Barrow-in-Furness..	9½	10	9½	9½	9½	9½	9½	7	7	7
Barry	9½	9½	9½	10	—	9	8½	6½	6½	6½
Bath	8½	8½	8½	8	7½	8	7½	5½	5½	5½
Bedford	8	8	8	8½	8	9	6½	5	5	5½
Birkenhead	11	11	11	11½	11	11	9½	7	7	7
Birmingham	11	11	11	11	10½	11½	9½	8	8	8
Bishop Auckland..	9	9	9	9	10	9	7½	6	6	6½
Blackburn	10	10½	10	10	9½	10	9½	6½	7	7
Blackpool	10½	9½	9½	9½	8½	9	8½	6	6	6
Bolton	10	10½	10	10½	10	10	9½	6-7	6-7	6-7
Bournemouth	8½	8½	8½	8½	8½	8½	8	6	6	6
Bradford	10	10	9	9½	9½	10	8½	7	7	7
Bridgwater	6½	6½	6½	6½	6½	6½	6	4	4	4
Brighton	9	8½	8½	8½	—	8	7	6	6	6
Bristol	10½	10½	10½	10½	—	10½	9½	7½	7½	7½
Burnley	10	9½	9½	9½	8	9	9½	7	7	7
Burton-on-Trent ..	9	9	9	9	8½	9	8½	6½	6½	6½
Bury	10½	10½	10	9	9½	10	9	6	6	6
Cambridge	9½	9	9	9½	9½	9½	7½	6	6	6
Canterbury	8½	8	8	10	—	8½–9	6½	5	5	5
Cardiff	10	10	10	10	10	10	8½	7½	7½	7½
Chatham	8	9	9	9	9	9	7½	6	6	6
Chelmsford	8	7½	8½	9	—	7½	6½	5	5	6½
Cheltenham	8½	8½	8½	9	—	8½	8	6	6	6
Chester	9½	10	9½	9½	9½	9½	8½	5½	6½-6½	5-5½
Chesterfield	9	9	9	8	9	8½	8½	5½	5½	5½
Colchester	8	8½	8½	9	8	9	6	5½	5½	5½
Coventry	10½	10½	10½	10½	9½	10½	8½	7½	7½	7½
Crewe	7	8	7½	9	8	8	7½	5	5½	6
Darlington	9½	9½	9½	10	10	9	8½	6½	6½	6½
Derby	9½	9½	9	9	9	9	8	6½	6½	7
Doncaster	9½	9½	9	9	9	9	8	6½	6½	7
Dudley	8½	8½	8½	8½	8½	8	7½	5½	5½	5½
Durham	9	9	9½	9	10	9	8½	6	6	6½
East Glamorgan and Monmouthshire Valleys	9½	9½	9½	9½	—	—	8½	6½	6½	6½
Exeter	8	8½	8	8½	7½	7½	7	5½	5½	5½
Folkestone	8½	8½	8½	9	8½	8½	7–7½	6½	6½	6½
Gloucester	8	8½	8½	8	8	8½	8	6	6	6
Grantham	8	8	7½	7½–8	7½–8	7	6½	5	5	5
Grays	—	10	10	—	—	9½	8½	7	7	7
Grimsby	9	9	9	9	9	8	8½	6½	6½	7
Great Yarmouth ..	8	8	8	—	8	8	6½	5	5	—
Halifax	10	10	9	8½	8½	9	8½	7	7	7
Harrogate	9½	9½	9	9	8	9	8½	6½	6½	6½
Hartlepools	9	10	9½	10	10	10	9	7	7	7½
Hastings	8½	8	8	8½	8	8	7	6½	5½	6½
Hereford	8	8	7½	8½	8	7	6½	5½	5½	5½
Huddersfield	10	9½	9½	9½	10	9	8½	7	7	7
Hull	10½	10	10	10	10	10	8½	7½	7½	7½
Ipswich	8½	8½	8½	9	9	8½	7	5½	5½	5½
Lancaster	10	10	9	9	9	9	9	5½	6	6
Leamington Spa ..	9	9	9	8½	9	9	8	6	6	6
Leeds	10	10	10	10	9	10	8½	7½	7	7½
Leicester	9½	9½	10	10½	9½	8½	9	7	7	7½
Lincoln	9	8½	8½	9	8	8½	8	6	7	7½
Liverpool	11	11	11	11	10½	11	9½	7	7	6
Llanelly	9½	9½	9½	8½	9	8½	8	5½	5½	5½
London	11½	11½	11½	11½	—	1s.	9	8	8	8
Loughborough	9	8½	8½	9	9	8½	7½	5½	5½	5½
Luton	9½	8½	8½	8½	9	8½	7½	6	6	7
Maidstone	9	9	9	9	9	9	8	6½	6½	7½
Manchester	10	10½	10½	11	10	10	9½	6½	6½	—
Mansfield	8½	9	8½	8½	—	8½	8	6	6	6½
Merthyr Tydfil	9½	9½	9½	9½	8½	9	8	6½	6½	7
Middlesbrough	9	10	9½	10	10	10	8½	7	7	7½
Newcastle-on-Tyne.	10½	10½	10½	10½	10	10	9	7½	7½	7½
Newport, Mon.	10	10	10	10	8½	10	8½	7	7	7
Northampton	9	9	9	9	8½	9	8	6	6	6
Norwich	8	8½	8½	8½	8	8½	7	5½	5½	5½
Nottingham	10	10	10	10½	9½	10	9	7½	7	8
Oldham	10½	10½	10½	10	9	10	9½	7	7	7½
Oxford	9½	9	9	9	8	9	8	6½	6½	6½
Plymouth	9	9	9	9½	9	9	8	6½	6½	6½
Pontypridd	9½	9	9	9	9	9	8	6½	6½	6½
Portsmouth	9½	9½	9½	—	—	8½	7½	7	7	7
Preston	10½	10½	10	9½	9½	10	9½	7½	7	6½
Reading	8½	9	9	9½	—	9	7½	6	6	6
Rochdale	10½	10½	10	10	8½	9½	9	7	7	7½
Rochester	8	9	9	9	9	8½	7½	6	6	6
Rugby	9½	9½	9½	9½	8	9½	7	6	6	6
St. Albans	9	9	9	9–10	9	9–10	8	6	6	6½
St. Helens	9	9½	10	9½	9½	9½	9½	6	6	6
Scarborough	9	9½	9	8½	8	9	8	7	7	7
Sheffield	10½	9½	8½	9½	9½	9½	8½	6½	6½	6½
Shrewsbury	8½	8½	8½	9½	—	8½	7	5½	6½	5½
Southampton	8½	9½	9½	8½	—	9½	8½	6½	6½	6½
Southend-on-Sea ..	9	9	9	P'cework	9	9	7	6	6	6
Southport	10	10	9½	9½	9½	9½	9½	6½	6½	6½
South Shields	10½	10½	10½	10	8½	9	7½	7½	7½	7½
Stockport	10½	10	10	10½	9	10	8½	6	6½–7	7½
Stockton-on-Tees ..	9	10	9½	10	10	10	9	7	7	7½
Stoke-on-Trent	9	9½	9	9	—	8½	8½	6	6	—
Stroud	7½	7½	7½	7½	7½	7½	7	5	5	6
Sunderland	10	10½	10	10	10	9	9	6½	6½	7
Swansea	9½	9½	9½	9½	8½	9	9	6½	6½	7
Taunton	7	7	7	7	—	6	6½	4½	4½	4½
Torquay	8	8	8	8	8	8	8	6	6	6
Wakefield	9½	9½	9	9½	8½	9	8	6½	6½	6½
Walsall	9½	9	9	9	8½	9	8	6½	6½	6½
Warrington	8½	9½	9½	10	8½	9	8	5½–6	6	6–6½
West Bromwich ..	10	10	9½	9½	—	9½	8½	7	7	7
Wigan	10	10½	9½	9	9	9½	9½	7	7	7
Windsor	9	9	9	10	—	9	—	6	6	6
Wolverhampton ..	9½	9½	9½	10	8	10	8	6½	6½	6½
Worcester	8½	9	9	9	8½	9	7½	6	6	6
York	9½	9½	9	9½	9½	8½	8½	7	7	7

The masons' rate given is for bankers; fixers usually ½d. per hour extra.

WAGES IN THE BUILDING TRADE.

Bangor.—The plasterers have handed in two weeks' notice instead of six months' for an advance in wages from 7½d. to 8d. per hour. The employers have offered to pay 7¾d. per hour, which they had been paying for some time prior to the recent decision of an arbitrator, who fixed the rate at 7½d.

Birkenhead.—The carpenters and joiners of the Birkenhead and Wirral district have asked for a conference to be arranged to discuss the question of an advance in wages.

Leigh, Atherton, and Tyldesley.—An advance in wages of ½d. per hour (10d. to 10½d.) has been granted to the bricklayers in this district as from May 1.

Liverpool. — The masons, bricklayers, plumbers, labourers, and electricians have applied for a conference with a view to discussing an increase in wages owing to the war. These demands are not in accordance with the working rules, but with a view to adopting the best way of dealing with them, a special general meeting of the Liverpool Master Builders' Association was called, and as a result the following letter has been sent to the various societies :—"Referring further to the correspondence that has passed between us with regard to the above, the same has received the very careful consideration of my Association, and I am instructed to reply as follows :—A large portion of the work that is going on in Liverpool and district was let prior to the war, and some of such work is likely to go on for a very long time. All current contracts have been made upon the basis of the rates of wages embodied in the signed rules existing between your Union and this Association, and builders are absolutely bound by the contracts they have entered into. In view of these circumstances, my Association cannot possibly entertain your Union's request for an increase in wages. As to your statement that advances have been granted, if you will look into the matter you will find that such advances apply to certain trades, public bodies, and Corporations, which are in a position to recoup themselves by higher charges. The position of the building trade in all parts of the country is such, that the longer the war lasts the less building work there will be to do, as so many people, including public bodies, are refraining from having work done owing to the high cost of buildings. This will throw an extra burden on the employers, because they have large establishment charges running, even if there is no work to do, which will be a dead loss to them. Any increase of wages would make the position for the near future worse, as it would tend to further stop what little work is likely to come out. My Association desire with the greatest respect to point out to your Union that the present crisis is inflicting conditions on employers in the building trade which, from a financial point of view, will be very heavy, but they accept the position, and they think that the workmen who remain in this country, and are working for ordinary trades, should see their way to bear their fair share of any expense the present crisis may throw upon them."

Manchester.—The Electrical Branch of the Manchester, Salford, and District Building Trades' Employers' Association has come to terms with its operatives for an advance in wages of 1d. per hour (9½d. to 10½d.) as from May 1, 1915.

Oldham.—The operative bricklayers in this district have sent in certain proposals for a war bonus to be paid during the period of the war.

Stockport.—The members of the National Association of Builders' Labourers are demanding an advance in wages of ½d. per hour. According to the existing working rules, no notice should be tendered before August, 1915.

Warrington.—The joiners have applied for an increase in wages owing to the war. This demand not being in accordance with the working rules, the Warrington and District Master Builders' Association has refused to grant the increase, and has replied to the operatives, giving its reasons for so doing.

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations :—T.C. for Town Council; U.D.C. for Urban District Council: R.D.C. for Rural District Council: E.C. for Education Committee; L.G.B. for Local Government Board: B.G. for Board of Guardians; L.C.C. for London County Council: B.C. for Borough Council; and P.C. for Parish Council.

ABERANGELL.—The architect of the Merioneth E.C. has been instructed to report on the state of Aberangell Council School complained of by the Board of Education.

Aldershot.—Garage in St. George's-road for Messrs. R. Dickeson & Co., Ltd., and for sports arcade in Station-road.

* See also our list of Competitions, Contracts, etc. on page 498.

Ashby-de-la-Zouch. — Plans deposited by Messrs. Orton & Son on behalf of Mr. Pringle for a dwelling-house in Burton-road have been passed.

Ashington.—A House of Lords Committee have approved of the Bill promoted by the U.D.C. for the improvement of the water supply.

Ascot.—Plans of a house at Kennel Ride for Mr. W. Watson have been approved.

Barnsley.—The T.C. have adopted a scheme for extensions at the electricity works at an estimated cost of £21,850.

Bexhill.—The Government have entered into a contract with Mr. F. J. Greed, builder, to erect a new post-office (post, telegraph, and telephone) in Endwell-road, close to the L.B. and S.C. railway-station.

Bolton.—Bungalow in Towncroft-lane for Mr. D. F. Green; six houses in Devonshire-road for Mr. T. Woods; seven in New Hall-lane for Messrs. Leigh Bros., Ltd.; lavatories in Oxford-street for Messrs. Tate & Son; a shed in Parrott-street for Messrs. Magee, Marshall, & Co., Ltd.; shed in Back Plover-street for Messrs. Dickinson & Co.; and shed in Back Raphael-street, Brownlow Fold, for Messrs. W. Edge & Sons, Ltd.

Box.—Bungalow for Mr. Creighton.

Brampton.—The L.G.B. have held an inquiry into the application of the R.D.C. for sanction to borrow £3,600 for the purposes of water supply for Cumwhitton, Northsceugh, and Moorthwaite.

Bridge.—The R.D.C. have passed the following plans:—Alterations to a farmhouse at Littlebourne Court; pair of cottages at Lodge Less Farm for Mr. T. W. Austin; alteration to a residence at Harbledown for Mr. Palmer, with adjoining cottage and garage.

Bristol.—The Docks Committee have authorised the Engineer to invite tenders for the construction of a high-level footbridge over the Great Western Railway lines between the granary and the Dock premises at Portishead. An application by Messrs. C. J. King & Sons to rent land at Avonmouth Dock for the erection of a gear store has been approved.

Caistor.—The R.D.C. have decided to erect at the hospital a steam disinfector and an administrative block of buildings at a total cost of £630.

Cannock.—A L.G.B. inquiry has been held into an application of the U.D.C. for sanction to a loan of £10,675 for the purpose of providing working-men's dwellings.

Charlton Kings.—The Gloucestershire E.C. have given notice of their intention to build a new school.

Chatham.—Plans passed by the T.C.:—Three houses in Kingswood-avenue for Mr. H. P. Hughes; two houses in Ewart-road for Mr. H. A. Phillips.

Chesterfield.—A scheme for the erection of thirty-eight working-class houses in St. Augustine-road is to be prepared by the Assistant Borough Surveyor. The cost is not to exceed £185 per house.

Clydebank.—The T.C. have approved plans for workmen's dwellings, and have decided to invite tenders for the work.

Coventry.—Mr. B. Baddeley has bequeathed £500 to the Queen's-road Baptist Chapel for the erection of a minister's house.

Crompton.—Plans approved:—Four houses, Milnrow-row, for Mr. T. S. Meanock; pump-house for the Fern Spinning Company, Ltd.; petrol store for the Wye Mill Company, Ltd.; and a chimney for Messrs. Hardman, Ingham, & Dawson's "Cocker Mill."

Darlington. — Plans passed:—Mr. J. E. Chilton, four houses in Willow-road, and one house in Woodlands-road; Messrs. Taylor & Minor, seven houses in Pendower-street; the Darlington R.C., corrugated-iron building in Mill-street; and Messrs. Kellett & Clayton, house in Neasham-road.

Edinburgh.—The Committee of the Carnegie Trust has made a grant of £8,000 to the Scottish Zoological Society towards the erection of an aquarium in their gardens.

Eton.—Plans were received from Messrs. Edgington & Spink for alterations and additions to the buildings at the Waterworks for the Windsor Corporation, and have been approved.

Glasgow.—Linings granted by the Dean of Guild Court:—Glasgow Corporation, to erect waiting-rooms and model yacht house at Richmond Park; Glasgow Steel Roofing Company, Ltd., engineers, North-Western Works, Possilpark to add to their works in Balmore-road; Messrs. Ferguson, Shaw, & Sons, oil refiners, Port Dundas, to erect warehouses and works in Dobbie's Loan and Bishop-street; the Govancroft Pottery Company, Ltd., London-road, to erect three kilns there; Messrs. W. P. Lowrie & Co., Ltd., Washington-street, to alter and add to subjects in Hydepark-street; R. Greenlees & Co., Ltd., 42, Great Clyde-street, to erect buildings in Norfolk-lane; Cooper & Co., grocers, Howard-street, to erect a bakery and store in Bishop-street, Anderston; Messrs. David Rowan & Co., marine engineers, 231, Elliot-street, to extend their boiler shop there.

Great Harwood.—Plans passed:—Two semi-detached villas in a street off Cliffe-lane for Mr. Daniel Harrison; semi-detached cottages in Cliffe-lane for Messrs. Eccles & Turner; alterations to 30, Blackburn-road, for Mr. Thomas Simms; alterations to the Grand Electric Theatre in Blackburn-road for Mr. Frank Wesley.

Halstead.—Alterations to a house in New-street for Mr. W. H. Sargent approved.

Hindley.—Plans approved by the U.D.C.:—Cottage in Dootson-street, off Sandy-lane, for Mr. Jeremiah Dootson; confectionery bakehouse in Bridgewater-street for Mrs. Mary Potter; three houses in Wharncliffe-street, off Lord-street, for Mr. W. Hart; three cottages in Blantyre-street for Messrs. W. Stott & Sons.

Horncastle.—Plans for additions to a house at Leeds Gate, Coningsby, for Mr. E. Curtis, for alterations to the Rectory House at Somerby, and for a new house at Mareham-on-the-Hill for Mrs. Hurdman have been approved by the R.D.C.

Hythe.—A L.G.B. inquiry has been held into the application of the T.C. for sanction to borrow the sum of £1,200 for the construction of four additional groynes.

Ilford.—Plans passed:—Mr. F. Willmott, packing-room at 38, High-road; Mr. P. E. Brand, three garages in Cranbrook-road; Mr. W. J. Hobbs, for garages and four houses in Blenheim-avenue; and Mr. W. H. Knox, two houses in Parkway-gardens, Water-lane.

Leyland.—Plans of fourteen new houses in Hampden-road, east of Northgate, for Messrs. Duxbury & Co., and of two new houses in Hastings-road for Mr. James Tomlinson approved.

London.—The Building Act Committee of the L.C.C. have consented to the erection of a building on the site of 97 and 99, Seven Sisters-road, Holloway, on the application of Messrs. Biscoe & Stanton.

Lymn.—A L.G.B. inquiry has been held into the application of the U.D.C. to borrow a further £300 for sewerage purposes.

Macclesfield.—The Cheshire C.C. have decided to apply to the L.G.B. for permission to borrow £620 to improve the heating system at Parkside Asylum.

Manchester.—A L.G.B. inquiry has been held into the application of the T.C. to borrow £5,000 for the construction of a sewer in the urban district of Stretford to replace the Trafford storm-water sewer, and £4,060 for the construction of a storm-relief sewer between Ashton New-road and the Gorton Brook culvert.

Mansfield Woodhouse.—Plans passed: Shed at the rear of the Portland Hotel, High-street, for Cowpe's Trustees; three pairs of semi-detached dwelling-houses and premises, by Mr. Harold Ashley, in Morven-avenue.

Market Harborough.—The R.D.C. have passed plans for a new Liberal club at Fleckney.

Middlesbrough.—Subject to the completion of certain arrangements with the Crown, which were left in the hands of the General Manager, the Tees Conservancy Commissioners have approved of plans submitted by the North-Eastern Railway Company for the construction of a new line of deep-water quays at Eston on the Yorkshire side of the Tees.

Milnrow.—Plans of proposed villas at Ashfield-lane for Mr. G. L. Clegg have been approved by the U.D.C.

Penistone.—The L.G.B. have given the U.D.C. sanction to raise a loan of £880 for waterworks.

Peterborough.—Rebuilding of premises for Mr. C. Gray in Narrow-street.

Pontypool.—Plans for three houses and shops at Commercial-street, Cwmban, for Mrs. W. Davies are before the R.D.C.

Port Talbot.—Large industrial developments are contemplated. Messrs. Baldwins, Ltd., have leased about 40 acres of land by the side of Margam Dock, and will construct new works.

Queensbury.—The R.D.C. have passed plans for the new Ambler Thorn Liberal Club.

Rochester.—Plans passed:—Laundry in King-street, St. Margaret, for the Star Laundry Company; five houses, Randall-road, for Mr. H. A. Phillips.

Romford.—Plans passed for house in Hornchurch-road for Mr. Stansley.

Rotherham.—The R.D.C. have approved of plans for ninety houses on the Millindale Estate, Maltby.

Slough.—Plans passed for a petrol store in High-street for Mr. A. Smith; shed in Langley-road for Mr. A. H. Webbe; and stores at Chalvey for the Slough and District Co-operative Society.

Stamford.—A plan for four houses in North Fields, Stamford, submitted by Mr. E. E. Howell, has been passed, and one for three houses on land abutting on the Ryhall-road for Mr. W. Savage.

Sowerby Bridge.—Plans have been passed, submitted by Messrs. Astin Bros., wholesale clothiers, of Hebden Bridge, for the erection of clothing works in Burnley-road.

Stevenston.—At a meeting of Northern District Committee of Ayrshire C.C. a communication from the L.G.B. dealing with the proposed garden village at Ardeer, Stevenston, was intimated. It stated that a Welsh housing company has purchased a portion of the estate of Ardeer in the vicinity of the town of Stevenston, and proposes to erect thereon 700 semi-detached houses, principally for the accommodation of workmen employed at Nobel's Factories. The Board desires to know whether the proposed development might be controlled and ensured by means of a town-planning scheme. The meeting decided to reply that in the opinion of the District Committee it would not be prudent to adopt any town-planning scheme in the meantime, as the present housing scheme is drawn out on town-planning lines, and the scheme provides for 780 houses in all, varying in size from kitchen, scullery, and three bedrooms to kitchen, scullery, bathroom, three bedrooms, and parlour.

Swansea.—Plans passed by the R.D.C.:—Messrs. T. & F. Mills, Caereithin, two villas; Mr. W. John, Penrhiwfelin-road, Llangyfelach, one house; Mr. W. James, West-street, Gorseinon, garage; Mr. James Tibbs, Clydach-road, Ynisforgan, one house.

Torquay.—Plans approved:—Two houses on the Andersey Estate, Studley-road, for Mr. J. H. Edwards; six houses, adjoining Windsor-road, for Mr. H. J. T. Cruse.

Walsall.—The T.C. have decided jointly with the West Bromwich Council to purchase land at Barr Common for the erection of a sanatorium.

Walsgrave-on-Sowe.—Plans have been forwarded to the Board of Education for improvements and extensions to the Church schools.

Whitby.—The R.D.C. have decided to proceed with drainage work previously authorised on the Mill Scar Estate, Goathland.

GENERAL BUILDING NEWS.

BUSINESS PREMISES, OXFORD-STREET, W.

Near Oxford Circus, at the corner of Oxford-street and Swallow-passage, business premises are being erected from designs by Mr. Henry Tanner, F.R.I.B.A., Carlton-chambers, Regent-street, S.W. There will be two shops, one of which will be occupied by Messrs. Salmon & Gluckstein, Ltd., with suites of offices over. The general contractors are the Works Department of the Imperial Tobacco Company, Ltd.; the steelwork is by Messrs. Smith, Walker, & Co., Tothill-street, Westminster; and the fireproof floor construction is by Messrs. Diespeker's patent "Big Span" system, Holborn Viaduct, E.C.

NEW LIBRARY, ISLINGTON.

This building is in course of erection on a site purchased from the Tufnell Estate, near Cross-street, in the Essex-road. On the 13th inst. the memorial stone was laid by the Mayor. Mr. Mervyn Macartney, F.S.A., F.R.I.B.A., the architect of the building, was present, and also Mr. Henry Lovegrove, District Surveyor, Mr. H. Mills, L.C.C., Mr. T. Howell Williams, L.C.C., and others. The contract has been undertaken by Messrs. Patman & Fotheringham, of Park-street, Islington. The site cost about £3,000, and the building and fittings will cost about £10,000. The quantity surveyor is Mr. Gleed.

TRADE NEWS.

We are informed that the concrete water-tower recently erected at Stafford has been lined with Pudloed cement with perfectly satisfactory results.

The Forest Hospital, Mansfield, is being supplied with Shorland's double and single fronted warm-air ventilating patent Manchester stoves with descending smoke flues by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

FOREIGN AND COLONIAL.

Ecuador.

H.M. Consul at Guayaquil (Mr. H. W. Wilson) reports that the municipal authorities of that city have recently passed an ordinance requiring wire mesh or metal sheets to be used for building purposes in the city in place of the old style split bamboo laths.

H.M. Consul adds that this new ordinance will undoubtedly create a demand for wire mesh, stamped metal sheets, etc., designed to take a coating of plaster or cement. A list of importers of hardware, etc., at Guayaquil may be obtained by United Kingdom manufacturers of the goods mentioned on application to the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, London, E.C.

Canada.

Inquiry is made by a Montreal agent for catalogues and prices from United Kingdom manufacturers of ornamental terra-cotta for building purposes, for which it is stated there is a growing demand in Canada.

A firm in Ottawa, with branches in Montreal, Toronto, and Winnnipeg, wishes to represent United Kingdom manufacturers of iron body gate valves for waterworks. It is stated that the Canadian municipalities every year buy a large number of valves for their waterworks services, and that British manufacturers can compete successfully in valves over 12 in. diameter. The same firm would undertake business in municipal requirements generally.

United Kingdom manufacturers of the goods mentioned should apply, in the first instance, to the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, London, E.C., for the names and addresses of the respective inquirers. Further communications regarding the inquiries should be addressed to H.M. Trade Commissioner for Canada, 3, Beaver Hall-square, Montreal.

FIRE PROTECTION, CHISWICK.

We have received a copy of the annual Report of the Engineer and Surveyor to the Chiswick Urban District Council for the year ending March 31, 1915, in connection with the Fire Protection Department. This Report deals with details affecting directly or indirectly the protection of the district from fire, the necessary appliances, the paid members of the brigade, and those officials and employees who are also members of the brigade.

List of Competitions, Contracts, etc.

For some contracts still open, but not included in this List, see previous issues. **Those with an asterisk (*) are advertised in this number:** Competitions, — ; Contracts, iv., vi., viii. ; Public Appointment, xxii. ; Auction Sales, xxiv. Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.

Competitions.

NO DATE. — **Cheshire.** — COTTAGES. — Messrs. Lever Bros. invite designs for cottages on the Bromborough Estate. Nine premiums are offered. See advertisement in issue of March 19.

NO DATE.—**Stepney.**—MUNICIPAL BUILDINGS.—The Stepney B.C. invite designs for the proposed municipal buildings. Conditions may be obtained from Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15, Gt. Alie-street, Whitechapel, E.

NO DATE. — **Whitehaven.** — HOSPITAL. — The Galemire Joint Hospital Committee invite competitive designs from architects for a small hospital proposed to be erected in their district. Particulars of Mr. E. B. Croasdell, Clerk, Union Hall, Whitehaven.

Contracts.

BUILDING AND PAINTING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

MAY 24.—**Letterston.**—MANSE.—Erection of a manse for Berea and Rehoboth Congregational Churches at Square and Compass, Trevine, Letterston. Specifications at Glasfryn, Trevine. Deposit, £1 1s.

MAY 25.—**Chorley.**—ALTERATIONS.—For alterations at the discharge block at Isolation Hospital, Heath Charnock, for the Chorley Joint Hospital Board. Specifications at the hospital.

MAY 25.—**Hetton.**—PAINTING.—Painting of the Infectious Diseases Hospital at Rainton Bridge for the Hetton U.D.C. Forms of tender of the Surveyor, Mr. John Harding, Council Offices, Hetton-le-Hole.

MAY 25. — **Uxbridge.**—LAVATORY.—Erection of women's lavatory on a site adjoining the Market House, Uxbridge, for the U.D.C. Specifications from the Council's Surveyor, Mr. William L. Eves, 54, High-street, Uxbridge.

MAY 26. — **Cwmaman.** — HOUSES.—Building forty to fifty semi-detached houses at Cwmaman for the Duffryn View Building Club. Specification of Mr. Alec S. Cameron, architect, 14, Victoria-square, Aberdare.

MAY 26. — **Delph.** — HOUSES, ETC.—Erection of the following works:—(1) Additional story to Gatehead Mills, Delph; (2) ten dwelling-houses, New-road, Delph; (3) additions to Gatehead House, Delph. Quantities of Messrs. Joseph Berry & Sons, architects, 3, Market-place, Huddersfield.

MAY 26.—**Graveney.**—REPAIRS.—For minor repairs to the Council school for the Kent E.C. Particulars of Mr. R. S. Dunn, Correspondent, 3, Albion-terrace, Faversham.

MAY 26.—**Swindon.**—PAINTING.—Painting and decorating at several schools, and fixing new entrance gates, etc. Specifications from Mr. W. Seaton, Education Office, Town Hall, Swindon.

MAY 26. — **Waltham.** — REPAIRS, ETC.—For repairs and decorations at Waltham Council School for the Kent E.C. Particulars of Mr. C. J. Wanley Croft, Bridge, Canterbury.

MAY 26. — **Wrotham.** — REPAIRS, ETC.—For repairs and decorations to Wrotham Borough Green Council School for the Kent E.C. Particulars of Mr. F. W. Day, Correspondent, High-street, Borough Green, Kent.

MAY 27. — **Leyton.** — PAINTING.—Painting and decorating at the Central Library, High-road, Leyton; the Leytonstone Public Library, Granleigh-road, Leytonstone; and the Town Hall and Technical Institute, High-road, and Adelaide-road, Leyton, for the Leyton U.D.C. Specification from Mr. Ernest H. Essex, Surveyor, Town Hall, Leyton. Deposit, £5.

MAY 27. — **Netherton.**—EXTENSIONS.—Extensions and alterations to the Memorial School, Netherton, near Huddersfield. Quantities of Messrs. J. B. Abbey & Son, architects, District Bank-chambers, Market-street, Huddersfield.

MAY 27. — **Pontypridd.**—VESTRY.—Erection of a vestry at St. Catherine's Church, Pontypridd. Quantities of Messrs. A. O. Evans, Williams, & Evans, architects, Pontypridd. Deposit, £1 1s.

MAY 28. — **Cannock.** — CONVENIENCES.—Construction of conveniences in Victoria-street, Hednesford; Cannock-road, Chadsmoor; and Hednesford-road, Cannock, with all incidental works, for the U.D.C. Quantities of Mr. Robt. Blanchard, Engineer, Council Offices, Cannock.

MAY 28.—**Croydon.**—REPAIRS.—Repair and repointing of chimney-stacks at the Infirmary, Mayday-road, Thornton Heath, for the B.G. Specification of Mr. Henry Berney, architect, 33-35, High-street, Croydon. Deposit, £1 1s.

MAY 28. — **Salford.**—PAINTING.—For painting, etc., required at the Union Infirmary, Hope, Pendleton, for the Salford B.G. Specification of the Steward of the Infirmary.

MAY 28. — **Sheffield.** — EXCAVATIONS, ETC.—For excavations and concrete work for the Sheffield Electric Supply Department. Quantities of Mr. S. E. Fedden, Engineer and General Manager, Commercial-street, Sheffield. Deposit, £1 1s.

MAY 29.—**Dublin.**—GOODS SHED.—Erection of goods offices at Dublin for the Great Northern Railway Company (Ireland). Specification and quantities of Mr. T. Morrison, Secretary, Amiens-street Terminus, Dublin. Deposit, £2 2s.

MAY 29. — **Tavistock.**—ALTERATIONS, ETC.—The Devon E.C. invite tenders for the following work at Council schools: — Tavistock (infants): Alterations, improvement of lighting and ventilation, new porch, etc. Tavistock (Gulworthy): Alterations, improvement of lighting and ventilation, and the improvement of the offices, etc. Specifications at the respective schools.

MAY 29. — **Wantage.** — ALTERATIONS.—Sundry structural alterations and for supplying and fixing a bath, water-closet, and sink in the officers' quarters at the Union Workhouse for the Wantage B.G. Specification of the Surveyor, Mr John Wm. Harris, East Challow, Wantage.

MAY 31.—**Barry.**—HOUSE.—Erection of a house in Colcot-road, Barry, for Mr. David Morgan, Tylorstown. Quantities of Mr. R. S. Griffiths, architect, Tonypandy. Deposit, £2 2s.

MAY 31. — **Churwell.** — SPINNING SHED.—Erection of spinning shed at Lane Side Mills, Churwell, for Sir Charles Scarth & Sons, Ltd. Quantities of Mr. T. A. Buttery, architect, Queen-street, Morley, and 1, Basinghall-square, Leeds.

MAY 31.—**Dewsbury.**—SANATORIUM BUILDINGS.—Erection of certain buildings in connection with the Whitley Sanatorium. Quantities of the Borough Surveyor at the Town Hall, Dewsbury.

MAY 31. — **Hastings.** — BANDSTAND.—Erecting bandstand and covered shelters on the extended promenade at the Hastings Pier, Hastings. Specifications of the Borough Engineer, Mr. P. H. Palmer, Town Hall, Hastings.

* JUNE 2. — **Haggerston.** — PAINTING AND DECORATING.—The Shoreditch B.C. invite tenders for painting and decorating works at the Public Library.

JUNE 4.—**Llanon.**—VILLA, ETC.—Erection of a villa, with out-buildings, at Llanon, Cardiganshire, for Dr. Jenkin Lewis. Specifications of Mr. E. Llewellyn Lewis, architect, 13, Bridge-street, Lampeter.

JUNE 4. — **Stamford.**—WORKMEN'S DWELLINGS.—Erection of twenty-four working-class dwellings near the Conduit-road for the Corporation. Specification of the Borough Engineer, Mr. Fredk. R. Ryman, Town Hall, Stamford. Deposit, £2 2s.

JUNE 5.—**Grimsby.**—ALTERATIONS.—For alteration of premises into offices for the Grimsby R.D.C. Quantities of Mr. A. Hobson, Engineer, West St. Mary's Gate, Grimsby. Deposit, £2 2s

* JUNE 10. — **East Dulwich.** — CLEANING, DISTEMPERING, ETC.—The Southwark Guardians invite tenders for cleaning, distempering, etc., at the Infirmary.

NO DATE. — **Greenock.**—HOUSES.—Erection of not more than 150 dwelling-houses on the Roxburgh-street site each house to consist of two or three apartments, with scullery and water-closet, in conformity with the Local Building Regulations, for the Corporation. Plans at the Office of Public Works, Municipal Buildings, Greenock.

* NO DATE.—**Various Places.**—PAINTING, ETC.—The Metropolitan Asylums Board invite tenders for painting and repairs to various buildings under their control.

FURNITURE, MATERIALS, etc.

MAY 24.—**London.**—FIRE PAILS.—Supply to the Commissioners of His Majesty's Works of 3,000 fire pails, 1,000 lids for fire pails, 150 hand-bucket pumps. Forms of tender of the Controller of Supplies, H.M. Office of Works, etc., 18, Queen Anne's-gate, Westminster, S.W.

MAY 24. — **Stoke-on-Trent.** — MATERIALS. — Supply to the North Staffordshire Railway Company of stores and materials. Forms of tender of Mr. T. Thomas, Stores Superintendent, Stoke-on-Trent.

MAY 26. — **Bognor.** — GRANITE.—Supply to the U.D.C. of about 150 tons of 2-in. Leicester or Guernsey granite chippings. Mr. Joseph Jubb, Clerk, Bognor.

MAY 26. — **Feltham.** — TAR. — Supply to the Feltham U.D.C. of 10,000 gallons of refined tar (Road Board specification tar No. 1). Mr. Harold Dale, Clerk, Town Hall-chambers, Feltham.

MAY 26. — **India.** — MATERIALS.—Supply of (*a*) lamps and glass; (*b*) oils and colours, to the South Indian Railway Company. Specifications of Mr. V. E. de Broe, 91, York-street, Westminster, S.W. Charge for each specification, 10s.

MAY 26. — **London.** — STEEL SHELVING. — The Commissioners of His Majesty's Works, etc., invite tenders for the supply of about 10,400-ft. run of steel shelving, delivered and fixed, at the Estate Duty Office, Somerset House, London, W.C. Forms of tender of the Controller of Supplies, H.M. Office of Works, etc., 18, Queen Anne's-gate, Westminster, S.W.

MAY 27. — **Stowmarket.** — ROAD MATERIALS.—Supply to the Stowmarket U.D.C. of 200 tons of best broken granite, size 2½ in., and 300 tons of broken flints, size 2½ in. Mr. P. C. G. Hayward, Clerk, The Old Bank, Stowmarket.

MAY 28.—**Bodmin.**—MATERIALS.—Supply to the Cornwall County Asylum of painters' and glaziers' materials, printing and stationery. Forms of tender of Mr. A. F. Hughes, Clerk and Steward, Bodmin.

ENGINEERING, IRON, AND STEEL.

MAY 25. — **Dublin.** — STOKER.—Supply to the Dublin Electricity Supply Committee of an underfed stoker on one of their old Babcock boilers at their Pigeon House Works. Specifications from the City Electrical Engineer, Fleet-street, Dublin. Deposit, £1 1s.

MAY 26.—**India.**—ROLLING STOCK.—Supply to the South Indian Railway Company, Ltd., of rolling stock (mètre gauge)—thirty-six steel ballast wagons, complete excepting springs, wheels, and axles. Specifications of Mr. V. E. de Broe, No. 91, York-street, Westminster, S.W. Charge, £1.

MAY 26.—**Portsmouth.**—ELECTRIC LIGHTING.—Electric lighting, etc., at the girls' hostel now in course of erection in Milton-road, Portsmouth. Specification of Mr. G. Hammond Etherton, Town Clerk, the Town Hall, Portsmouth. Deposit, £3 3s.

MAY 29.—**Wigan.**—CABLE, ETC.—Supply to the Electricity Committee of (1) supply, laying, erection, and jointing of high-tension, three-core, paper and lead-covered, armoured feeder cable; (2) transformer and switchgear. Specification, etc., of Mr. James Slevin, Borough Electrical Engineer, Bradford-place, Wigan. Deposit, £1 1s. each specification.

MAY 31.—**Dublin.**—STEAM ROLLER.—Supply to the Corporation of a 10-ton steam road roller with scarifier. Specification of Mr. Michael J. Buckley, City Engineer, 28, Castle-street, Dublin.

JUNE 1.—**Portsmouth.**—TRAM RAILS.—Supply to the Corporation Tramways Committee of 100 tons steel girder tram rails (B.S. section No. 3), 5 tons steel fishplates, 1 ton fishplates, and 3 tons wrought-iron tiebars (5 ft.). Specification of the Engineer, Mr. V. G. Lironi, Engineer's Office, Fratton-grove, Portsmouth.

JUNE 2.—**Elham.**—IRON TANKS.—For supplying and fixing at the Workhouse, Lyminge, two cast-iron tanks, each of about 3,000 gallons capacity, for the Elham B.G. Specification of Mr. E. Lovick, Clerk, 29, Bouverie-square, Folkestone.

JUNE 10.—**Cadiz.**—NAVIGATION IMPROVEMENT.—For the carrying out of navigation improvement works at the mouth of the River Guadalate in the port of Sante Maria, Cadiz. Copy of *Gaceta de Madrid* at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

JUNE 16. — **Australia.** — ELECTRIC CRANES.—Supply to the Victorian Railway Commissioners of (1) a 15-ton electric crane; (2) a 5-ton electric crane; (3) a 1,000 ampère hour storage battery. Copies of specifications at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

JULY 7.—**Australia.**—VARIOUS.—Supply to the Victorian Railway Commissioners of (4) five high-speed drilling machines and accessories; (5) punching machine and accessories; (6) double-ended notching machine; (7) channel angle and bar-strengthening machine; (8) three high-speed capstan lathes; (9) high-speed milling and profiling machine; (10) pneumatic hand-draft power moulding machine; (11) two 10 cwt. steam hammers; (12) hydraulic bending and flanging press; (13) two pneumatic sand-riddling and separating machines; (14) hydraulic pig-iron breaker, etc.; (15) 9-in. gap toolmaker's lathe; (16) 9-in. toolmaker's lathe; (17) two radial-driling machines. Copies of specifications at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

NO DATE. — **Rhondda.** — HEADING.—Driving a dip heading in the No. 2 Rhondda seam for a distance of 200 yds. Manager, Gellihir Colliery, Llangonoyd.

[Those with an asterisk (*) are advertised in this issue.]

ROAD, SANITARY, AND WATER WORKS.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

MAY 24. — **Pontypridd.**—ROADS.—For carrying out road improvements at Llantwit-road, Treforest, Pontypridd, for the U.D.C. Quantities of Mr. W. E. Lowe, Engineer, Municipal Buildings, Pontypridd. Deposit, £1 1s.

MAY 25.—**Gateshead.**—PAVING.—Paving Back Ford-street East for the Corporation. Quantities of Mr. N. P. Pattinson, Borough Engineer, Town Hall, Gateshead.

JUNE 10.—**Westminster.**—PAVING.—The Westminster City Council invite tenders for the execution of paving works within their jurisdiction. The work in each street will be divided into three sections as follows, and the Council may accept separate tenders for one or more of such sections of the work in any street:—Section (*a*), excavation and foundation work; section (*b*), supply of wood blocks only; section (*c*), laying pavement on a provided foundation. Specification at the City Hall, Charing Cross-road, W.C.

NO DATE.—**Oldham.**—ASPHALTING.—Asphalting of school playgrounds for the Oldham E.C. Particulars of Mr. J. Rennie, Secretary, Education Offices, Oldham.

Public Appointment.

* MAY 31. — CLERK OF WORKS. — The Finchley U.D.C. invite applications for the above post. Salary, £4 4s. per week.

Auction Sale

* JUNE 22. — **Canning Town.**—Messrs. Fuller, Horsey, Sons, & Cassell will sell by auction, on the premises, various materials, plant, and timber.

[Those with an asterisk (*) are advertised in this issue.]

TO CORRESPONDENTS.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to THE BUILDER LTD., and *not* to the Editor.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples sent to or left at this office, unless he has specially asked for them.

All drawings sent to or left at this office for consideration should bear the owner's name and address on either the face or back of the drawing. Delay and inconvenience may result from inattention to this.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

PRICES CURRENT OF MATERIALS.

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.]

Since our last issue the prices of joists and girders have been advanced and oils have been slightly reduced.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1000 Alongside, in River Thames.	£	s.	d.
Best Stocks	1	18	0
Picked Stocks for Facings	2	12	0

Per 1000, Delivered at Railway Depôt, London.	£	s.	d.
Flettons	1	14	0
Best Fareham Red	3	12	0
Best Red Pressed Ruabon Facing	5	0	0
GLAZED BRICKS—			
Best White, Ivory, and Salt Glazed Stretchers	13	0	0
Headers	12	10	0
Quoins, Bullnose and 4½ in. Flats	16	10	0
Second Quality £1 10s. per 1000 less than best.			

	£	s.	d.
Best Blue Pressed Staffordshire	3	15	0
Do. Bullnose	4	0	0
Best Stourbridge Fire Bricks	4	0	0
D'ble Str'tch'rs	18	10	0
Double Headers	15	10	0
One Side and two Ends	19	10	0
Two Sides and one End	20	10	0
Splays and Squints	18	0	0

	s.	d.
Thames and Pit Sand	7	6 per yard, delivered.
Thames Ballast	6	0 " "
Best Portland Cement	38	0 per ton, "
Best Ground Blue Lias Lime	21	0 " "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 15s. 6d. per yard delivered.
Stourbridge Fireclay in sacks 35s. 0d. per ton at rly. dept.

STONE.

Per Ft. Cube.	s.	d.
BATH STONE — delivered on road waggons, Paddington Depot	1	7½
Do. do. delivered on road waggons, Nine Elms Depôt	1	9½
PORTLAND STONE (20 ft. average)—		
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	4½
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	6½

Per Ft. Cube, delivered at Railway Depôt.	s.	d.
Ancaster in blocks	1	10
Beer in blocks	1	6
Greenshill in blocks	1	10
Darley Dale in blocks	2	4
Red Corsehill in blocks	2	3
Closeburn Red Freestone	2	0
Red Mansfield Freestone	2	4
Talacre & Gwespyr Stone	2	4

STONE (*Continued*).

YORK STONE—*Robin Hood Quality.* Per Ft. Cube, Delivered at Railway Depôt.	s.	d.
Scappled random blocks	2	10
Per Ft. Super., Delivered at Railway Depôt.		
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	8
6 in. rubbed two sides ditto, ditto	2	6
3 in. sawn two sides slabs (random sizes)	0	11½
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7
1½ in. to 2 in. ditto, ditto	0	6
HARD YORK— Per Ft. Cube, Delivered at Railway Depôt.		
Scappled random blocks	3	0
Per Ft. Super., Delivered at Railway Depôt.		
6 in. sawn two sides landing to sizes (under 40 ft. super.)	2	8
6 in. rubbed two sides ditto	3	0
2 in. sawn two sides slabs (random sizes)	1	2
8 in. self-faced random flags	0	5

TILES.

	Per 1000 f.o.r. London. £	s.	d.
Best machine-made tiles or hand-made sand-faced tiles from either Broseley or Staffordshire district	2	12	6
Ornamental ditto	2	15	0
Hip and valley tiles (per dozen)	0	5	6

SLATES.

	Per 1000 of 1200 f.o.r. London. £	s.	d.
Best Blue Bangor slates, 20 by 10	11	5	0
First quality " "	11	0	0
" " 16 by 8	5	10	0
Best Blue Portmadoc, 20 by 10	11	2	6
First quality " "	10	12	6
" " 16 by 8	5	10	0

WOOD.

BUILDING WOOD.	At per standard. £	s.	d.		£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	21	10	0	..	22	0	0
Deals: best 3 in. by 9 in.	21	0	0	..	22	0	0
2 in. by 11 in.	23	0	0	..	23	10	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	19	10	0	..	20	10	0
Battens: best 2½ in. by 6 in. and 3 in. by 6 in.	0	10	0		less than 7 in. and 8 in.		
2 in. by 7 in.	20	0	0	..	—		
3 in. by 4 in.	21	0	0	..	—		
2 in. by 4½ in.	22	10	0	..	—		
3 in. by 4½ in.	21	10	0	..	—		
Deals: seconds	1	0	0	less than best			
Battens: seconds	0	10	0	"	"		
2 in. by 4 in. and 2 in. by 6 in.	18	10	0	..	19	10	0
2 in. by 4½ in. and 2 in. by 5 in.	16	0	0	..	17	0	0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0	10	0	more than battens.			
¾ in.	1	0	0	"			
Fir timber best middling	At per load of 50 ft.						
Memel (average specification)	6	15	0	..	7	15	0
Seconds	6	0	0	..	6	10	0
Small timber (8 in. to 10 in.)	5	5	0	..	5	10	0
Small timber (6 in. to 8 in.)	4	10	0	..	5	0	6
Swedish balks	4	0	0	..	4	10	0
Pitch-pine timber (30 ft. average)	8	5	0	..	9	0	0
JOINERS' WOOD	At per standard.						
White Sea: first yellow deals, 3 in. by 11 in.	33	15	0	..	35	0	0
Battens, 2½ in. and 3 in. by 7 in.	23	7	6	..	24	7	6
Second yellow deals, 3 in. by 11 in.	27	5	0	..	28	5	0
Do. 3 in. by 9 in.	25	5	0	..	26	5	0
Battens, 2½ in. and 3 in. by 7 in.	20	0	0	..	21	0	0
Third yellow deals, 3 in. by 11 in. and 9 in.	20	2	6	..	21	2	6
Battens, 2½ in. and 3 in. by 7 in.	19	0	0	..	20	0	0
Petersburg: first yellow deals, 3 in. by 11 in.	29	10	0	..	31	0	0
Do. 3 in. by 9 in.	25	5	0	..	26	5	0
Battens	19	5	0	..	20	5	0
Second yellow deals, 3 in. by 11 in.	21	10	0	..	23	0	0
Do. 3 in. by 9 in.	20	15	0	..	21	10	0
Battens	19	10	0	..	20	0	0
Third yellow deals, 3 in. by 11 in. / Do. 3 in. by 9 in.	19	10	0	..	—		
Battens	19	0	0	..	19	10	0
White Sea and Petersburg— First white deals, 3 in. by 11 in.	22	10	0	..	24	0	0
First white deals, 3 in. by 9 in.	21	0	0	..	22	10	0
Battens	18	10	0	..	19	0	0
Second white deals, 3 in. by 11 in.	20	0	0	..	21	0	0
Second white deals, 3 in. by 9 in.	19	0	0	..	20	0	0
Battens	18	0	0	..	18	10	0
Pitch-pine deals	34	0	0	..	35	0	0
Under 2 in. thick extra	0	10	0	..	1	0	0

WOOD (*Continued*).

JOINERS' WOOD (*Continued*)—	At per standard. £	s.	d.		£	s.	d.
Columbian or Oregon Pine, best quality	28	0	0	..	29	0	0
Yellow Pine—First, regular sizes	57	0	0		upwards.		
Oddments	39	0	0		"		
Seconds, regular sizes	43	10	0		"		
Oddments	37	0	0		"		
Kauri Pine—Planks per ft. cube	0	7	6	..	—		
Oak Logs— Large, per ft. cube	0	5	6	..	0	6	6
Small " "	0	4	6	..	0	5	5
Wainscot Oak Logs, per ft. cube	0	10	6	..	0	12	6
Dry Wainscot Oak, per ft. super, as inch	0	1	0	..	0	1	3
¼ in. do. do.	0	0	10	..	0	1	0
Dry Mahogany—Honduras, Tabasco, per ft. super, as inch	0	1	0	..	0	1	4
Selected, Figury, per ft. super, as inch	0	1	6	..	0	2	6
Cuba Mahogany	0	1	6	..	0	2	6
Dry Walnut, American, per ft. super, as inch	0	1	0		upwards. 0	1	3
French, "Italian," Walnut	0	1	0	..	0	1	6
Teak, per load (Rangoon or Moulmein)	28	0	0	..	34	0	0
Do., do. (Java)	24	0	0	..	27	0	0
American Whitewood planks, per ft. cube	0	6	6	..	0	7	6
Prepared flooring, etc.—	Per square.						
1 in. by 7 in. yellow, planed and shot	0	18	0	..	1	0	0
1 in. by 7 in. yellow, planed and matched	0	18	0	..	1	0	0
1¼ in. by 7 in. yellow, planed and matched	1	2	0	..	1	5	0
1 in. by 7 in. white, planed and shot	0	17	6	..	1	0	0
1 in. by 7 in. white, planed and matched	0	18	0	..	1	0	0
1¼ in. by 7 in. white, planed and matched	1	2	0	..	1	5	0
¾ in. by 7 in. yellow, matched and beaded or V-jointed boards	0	14	6	..	0	16	6
1 in. by 7 in. " "	0	18	6	..	1	1	0
¾ in. by 7 in. white "	0	14	6	..	0	16	6
1 in. by 7 in. " "	0	18	6	..	1	1	0

6 in. at 6d. to 9d. per square less than 7 in.

METALS.

JOISTS, GIRDERS, &c.	In London or delivered Railway Vans, per ton. £	s.	d.		£	s.	d.
Rolled Steel Joists, ordinary sections	10	10	0	..	11	10	0
Compound Girders, ordinary sections	13	0	0	..	14	0	0
Steel Compound Stanchions	14	0	0	..	16	0	0
Angles, Tees, and Channels, ordinary sections	13	0	0	..	14	0	0
Flitch Plates	13	0	0	..	14	0	0
Cast Iron Columns & Stanchions, including ordinary patterns	10	0	0	..	11	0	0
IRON—	Per ton, in London.						
Common Bars	10	10	0	..	11	0	0
Staffordshire Crown Bars, good merchant quality	10	15	0	..	11	5	0
Staffordshire "Marked Bars"	12	0	0	..	—		
Mild Steel Bars	11	0	0	..	12	0	0
Steel Bars, Ferro-Concrete quality, £12 basis price.							
Hoop Iron, basis price	11	0	0	..	—		
" Galvanised	19	0	0	..	—		

(* And upwards, according to size and gauge.)

Sheet Iron Black—	£	s.	d.		£	s.	d.
Ordinary sizes to 20 g.	11	10	0	..	—		
" " 24 g.	12	10	0	..	—		
" " 26 g.	14	0	0	..	—		
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	16	10	0	..	—		
Ordinary sizes to 22 g. and 24 g.	17	0	0	..	—		
Ordinary sizes to 26 g.	18	0	0	..	—		
Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g.	19	0	0	..	—		
" " 22 g. and 24 g.	19	10	0	..	—		
Ordinary sizes to 26 g.	20	10	0	..	—		
Galvanised Corrugated Sheets— Ordinary sizes, 6 ft. to 8 ft. 20 g.	15	10	0	..	—		
Ordinary sizes, 22 g. and 24 g.	16	10	0	..	—		
Ordinary sizes, 26 g.	17	10	0	..	—		
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	13	10	0	..	—		
Best Soft Steel Sheets, 22 g. & 24 g.	14	10	0	..	—		
Best Soft Steel Sheets, 26 g.	16	10	0	..	—		
Cut Nails, 3 in. to 6 in.	13	10	0	..	14	0	0

(Under 3 in., usual trade extras.)

LEAD, &c.

Delivered in London.

LEAD—Sheet, English, 4 lb.	£	s.	d.	..	—
and up	25	0	0	..	—
Pipe in coils	25	10	0	..	—
Soil pipe	28	10	0	..	—
Compo pipe	28	10	0	..	—

NOTE—Delivery in country in not less than 5 cwt. lots, 1s. per cwt. extra.

ZINC—	In casks of 10 cwt.				
Sheet	32	0	0	..	—
Zinc in bundles .. per cwt.	4	6	0	..	—
COPPER—					
Strong Sheet ..... per lb.	0	1	4	..	—
Thin " ..... "	0	1	6	..	—
Copper nails ..... "	0	1	4	..	—
Copper wire ..... "	0	1	4	..	—
BRASS—					
Strong Sheet ..... "	0	1	3	..	—
Thin ..... "	0	1	4	..	—
TIN—English Ingots .. "	0	1	9	..	—
SOLDER—Plumbers' .. "	0	0	10	..	—
Tinmen's ..... "	0	1	1	..	—
Blowpipe ..... "	0	1	3	..	—

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.*

Per Ft. Delivered.

15 oz. thirds	4½d.	26 oz. fourths	5½d.
" fourths	4½d.	32 oz. thirds	8½d.
21 oz. thirds	5½d.	" fourths	7d.
" fourths	5d.	Fluted Sheet, 15 oz.	5½d.
26 oz. thirds	6½d.	" 21 oz.	6½d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.*

Per Ft. Delivered.

¼ Rolled plate	3d.
⅜ Rough rolled and rough cast plate	3½d.
½ Rough rolled and rough cast plate	4d.
Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffled, and Rolled Cathedral, white	5d.
Ditto, tinted	6d.

* Not less than two crates.

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	2	8
" " " in barrels	"	0	2	9
" " " in drums	"	0	3	0
Boiled " " in barrels	"	0	2	11
" " " in drums	"	0	3	2
Turpentine in barrels	"	0	3	0
" in drums	"	0	3	3
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		34	0	0
Red Lead, Dry	per ton	35	0	0
Best Linseed Oil Putty	per cwt.	0	10	0
Stockholm Tar	per barrel	1	12	0

GENUINE WHITE LEAD PAINT—

Blackfriars, Nine Elms, or Park, etc., brands (in 14 lb. tins), not less than 5 cwt. lots ..... per cwt. delivered	2	2	6	

VARNISHES, &c.

	Per gallon. £	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	0

Austrian

RUSSIAN and JAPANESE PRIME DRY

WAINSCOT **Oak**

SYDNEY PRIDAY,

KING WILLIAM HOUSE, 2a, EASTCHEAP, LONDON, E.C.

Depot: Wainscot Sheds, Millwall, E. *T.N.: Avenue 667.*

VARNISHES, &c. (*Continued*).

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Extra Pale French Oil	1	1	0
Eggshell Flating Varnish	0	18	0
White Plate Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	0
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	0
Berlin Black	0	16	0
Knotting	0	10	6
French and Brush Polish	0	10	0

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.]

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 2 p.m. on Wednesday.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.* unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

CAMBRIDGE.—Construction of bridge and approaches at Dimmocks Cote, for the Cambridgeshire County Council:—

Lambrick & Co., Burton-on-Trent* £4,828 6 11

EDINBURGH.—Supply of water-tube boilers to the Corporation, in connection with electric light extension works:—

Stirling Boiler Co.* £32,000

GILFACH GOCH (Glam.).—For the erection of a new school for 468 scholars at Hendreforgan, for the Glamorgan County Council. Mr. D. Pugh-Jones, F.S.I., County Architect, Cardiff:—

Beames & Makin, Violet-row, Cardiff* £4,924 1 8

GILFACH GOCH (Glam.).—For the erection of a new school for 350 boys at Evanstown, for the Glamorgan County Council. Mr. D. Pugh-Jones, F.S.I., County Architect, Cardiff:—

Beames & Makin, Violet-row, Cardiff* £5,064

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HARWICH. — For making-up Clarke's-road, Dovercourt, for the Corporation:—

E. E. Newton* £722 4 9

LEICESTER.—For rebuilding the Star Inn, Belgrave Gate. Mr. W. T. Grewcock, A.R.I.B.A., St. Martin's-chambers, New-street, Leicester:—

J. Bentley & Co.	£1,964	Bowles & Son	£1,834
J. E. Johnson & Son, Ltd.	1,950	J. Chapman & Sons, Ltd.	1,817
J. Hutchinson & Son	1,890	Hardington & Elliott	1,749
W. M. Sharpe & Son, Ltd.	1,875	Chitham & Co. ..	1,725
A. & W. Chambers	1,859	J. Cole & Sons	1,713

MIDDLESBROUGH.—For slag scoriæ brick paving work required at back street between Oxford and Barker roads. Mr. S. E. Burgess, Borough Engineer, Middlesbrough:—

J. Pearson, Ltd. £352 19 8
J. Crombie & Son, Ltd. 280 14 10
Goodhall Bros., 11, Clifton-street, Middlesbrough* 266 14 0

OGMORE VALE (Glam.).—For additions to the Frowen Council School, for the Glamorgan County Council. Mr. D. Pugh-Jones, F.S.I., County Architect, Cardiff:—

W. A. Jones, Cowbridge-road, Bridgend.* £2,975 9 9

ROCHESTER.—Supply of motor fire-engine to the Corporation:—

Dennis Bros.	£1,050	Leyland Motors, Ltd.	£1,044
Merryweather & Sons*	1,048		

RUDRY (Glam.).—For improvements in the Rudry Council School, Caerphilly, for the Glamorgan County Council. Mr. D. Pugh-Jones, F.S.I., County Architect, Cardiff:—

Hamilton & Millard, Van-road, Caerphilly.* £484 10

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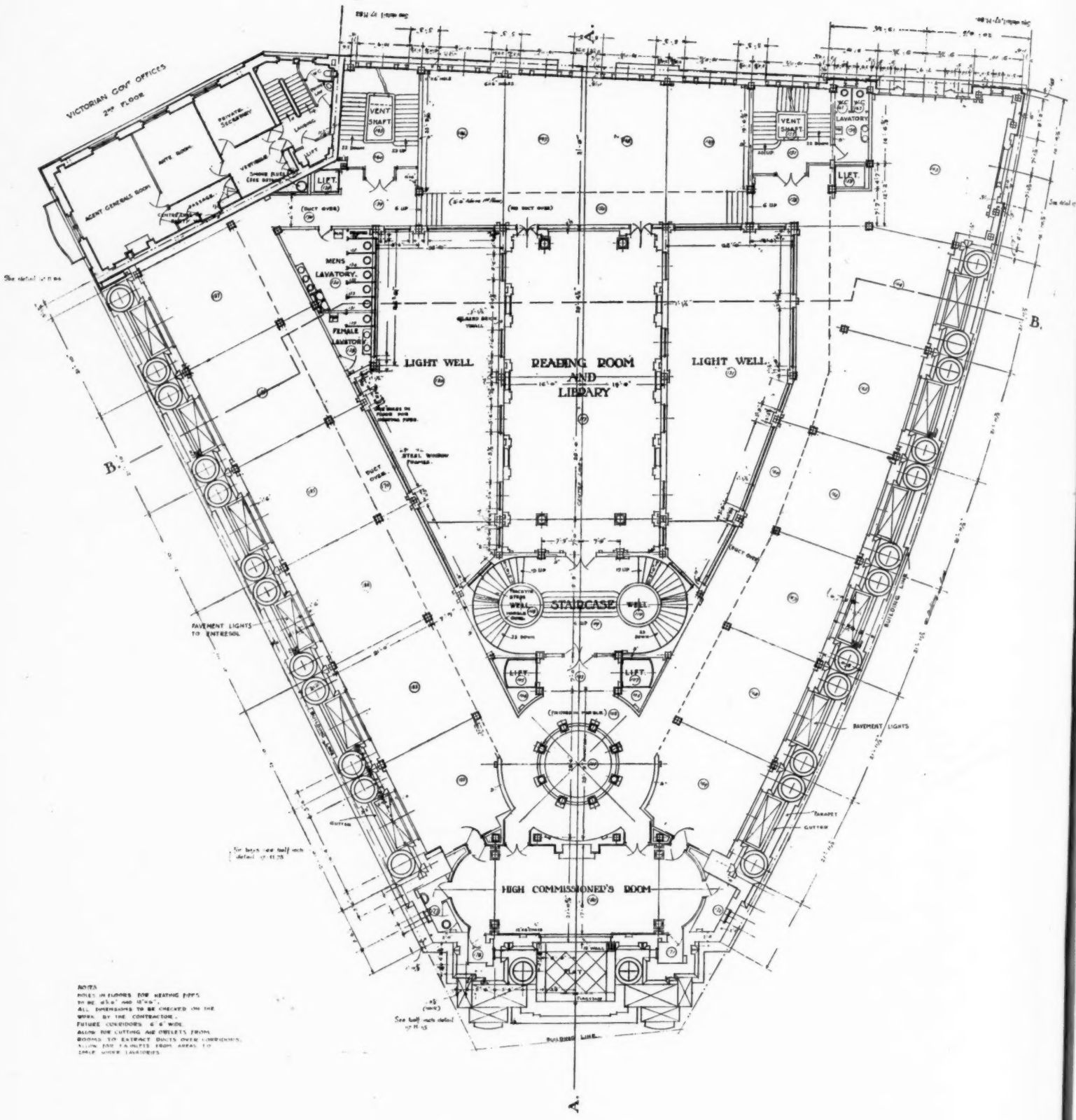

NOTES
HOLES IN FLOORS FOR HEATING PIPES TO BE 6"x6" AND 12"x6".
ALL DIMENSIONS TO BE CHECKED ON THE WORK BY THE CONTRACTORS.
FUTURE CORRIDORS 6'6" WIDE.
ALLOW FOR CUTTING AND OUTLETS FROM ROOMS TO EXTRACT DUCTS OVER CORRIDORS.
ALLOW FOR TA NPITS FROM AREAS TO SMELP WHERE LAVATORIES

FIRST FLOOR.

SCALE

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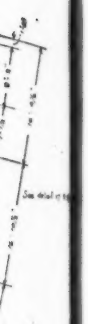
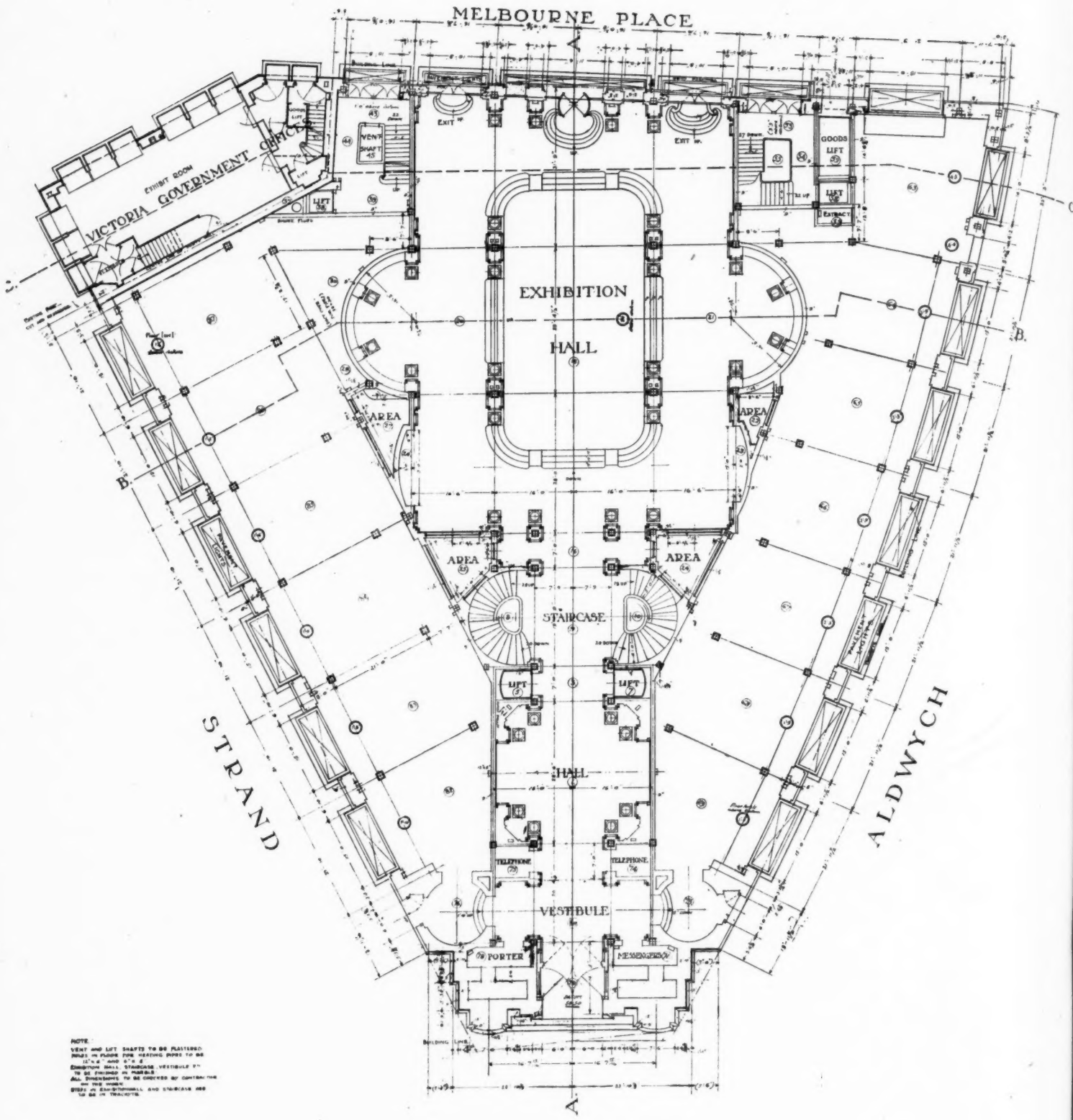


B.



GROUND FLOOR.

SCALE

AUSTRALIA HOUSE, STRAND AND ALDWYCH, LONDON: GROUND FLOOR PLAN.

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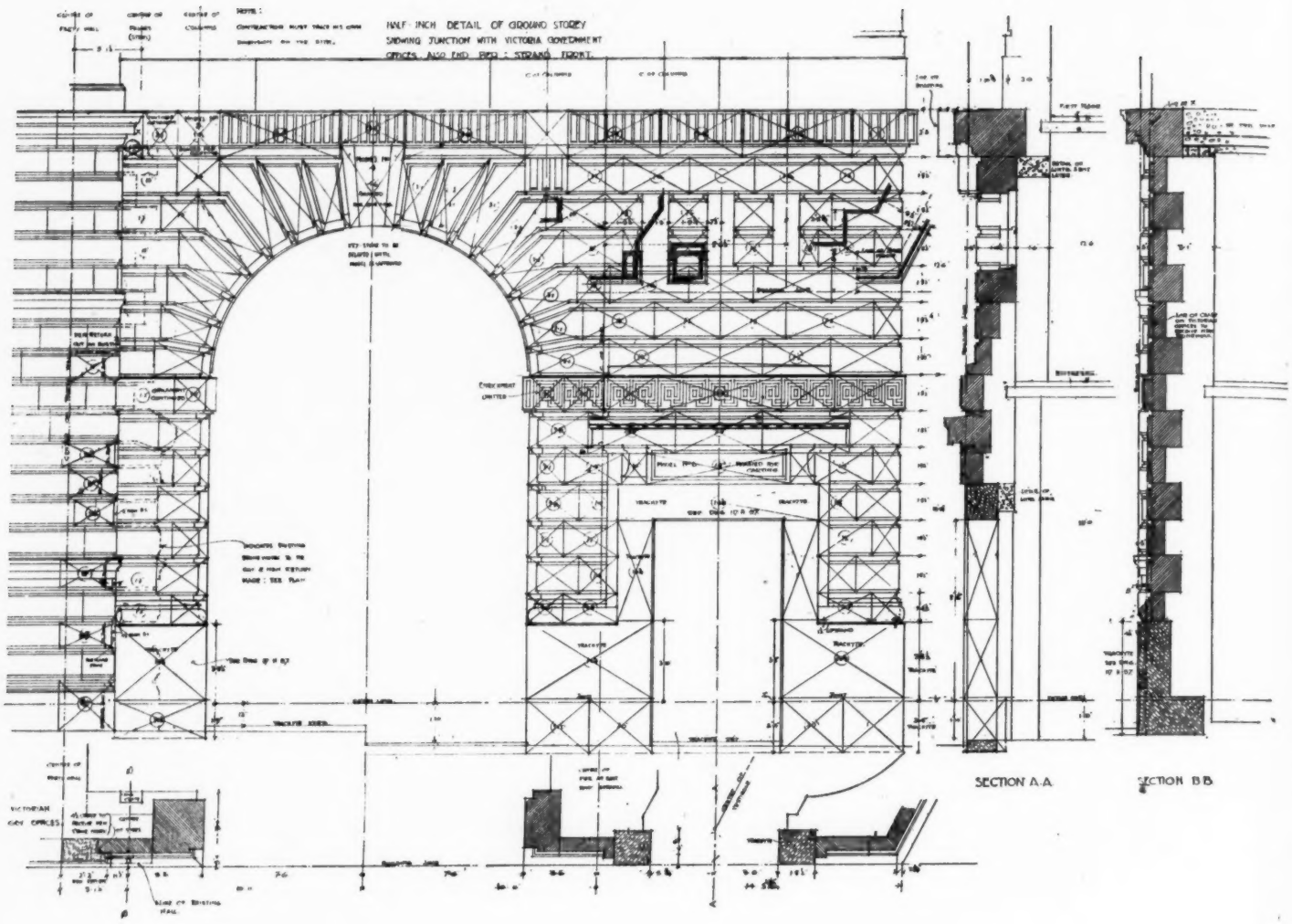
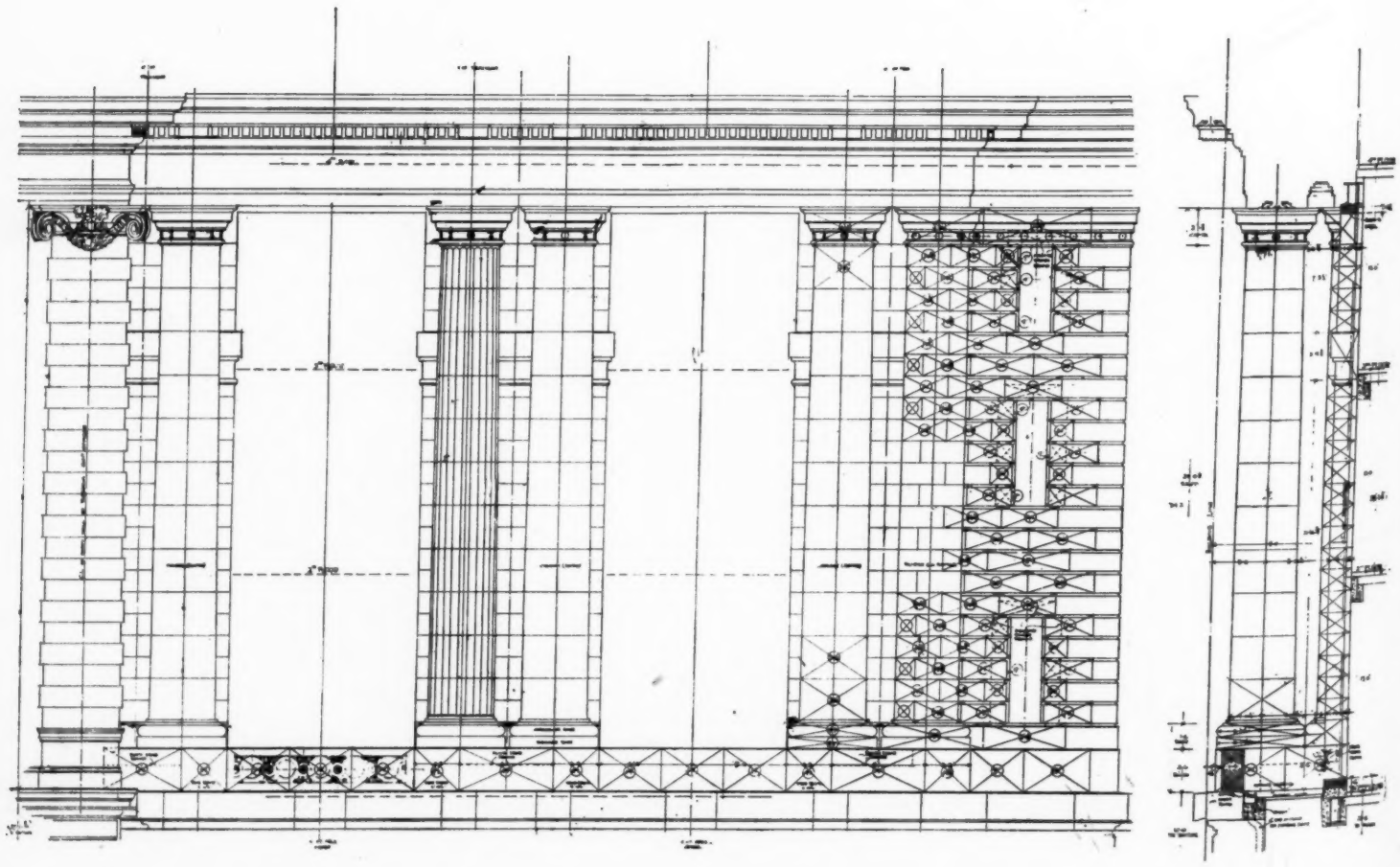

HALF INCH DETAIL OF GROUND STOREY
SHEWING JUNCTION WITH VICTORIA GOVERNMENT
OFFICES, AND END PIER : STRAND FRONT.
SECTION A.A
SECTION B.B



AUSTRALIA HOUSE, STRAND AND ALDWYCH, LONDON: DETAILS.

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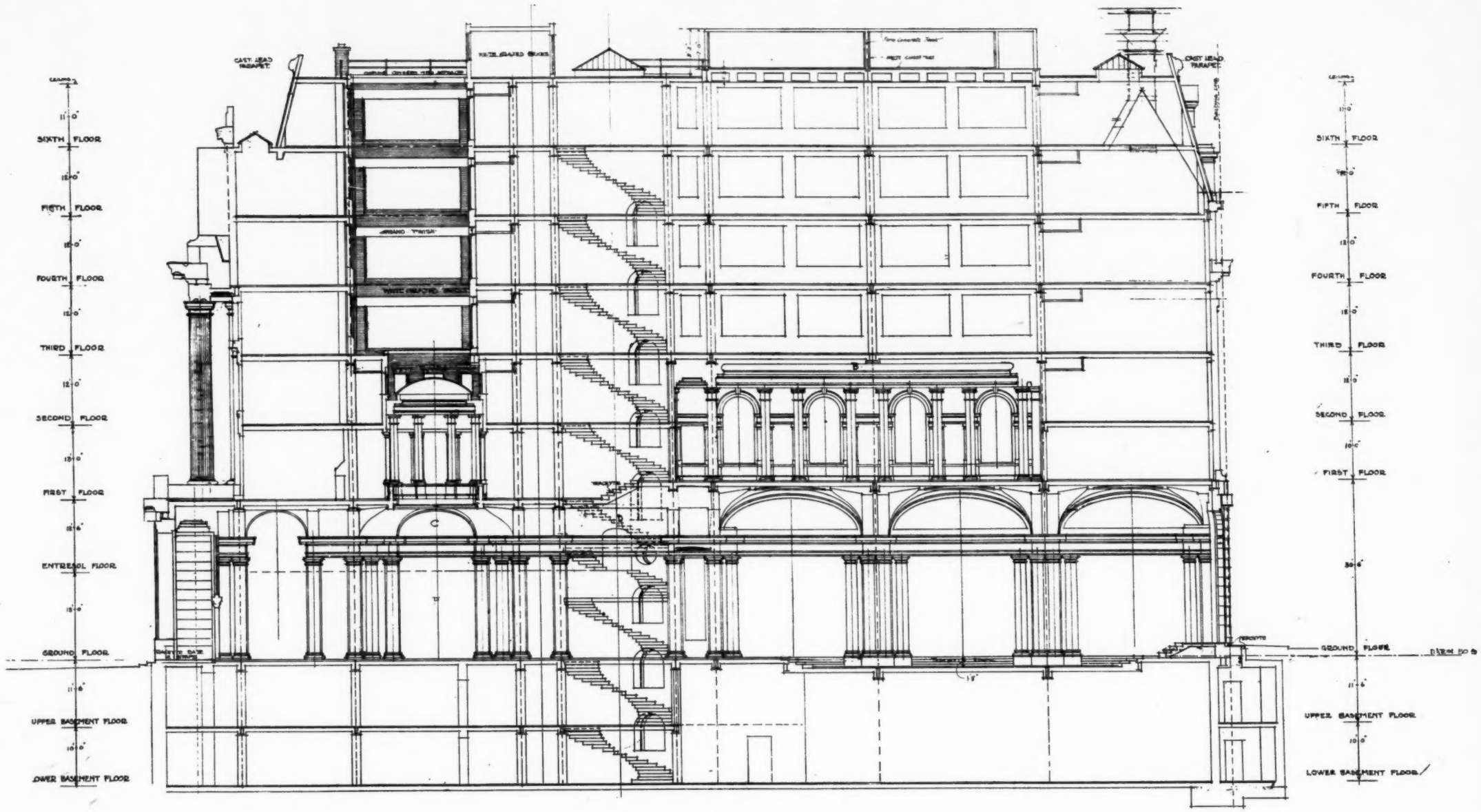

LONGITUDINAL SEOTION A-A.

SCALE

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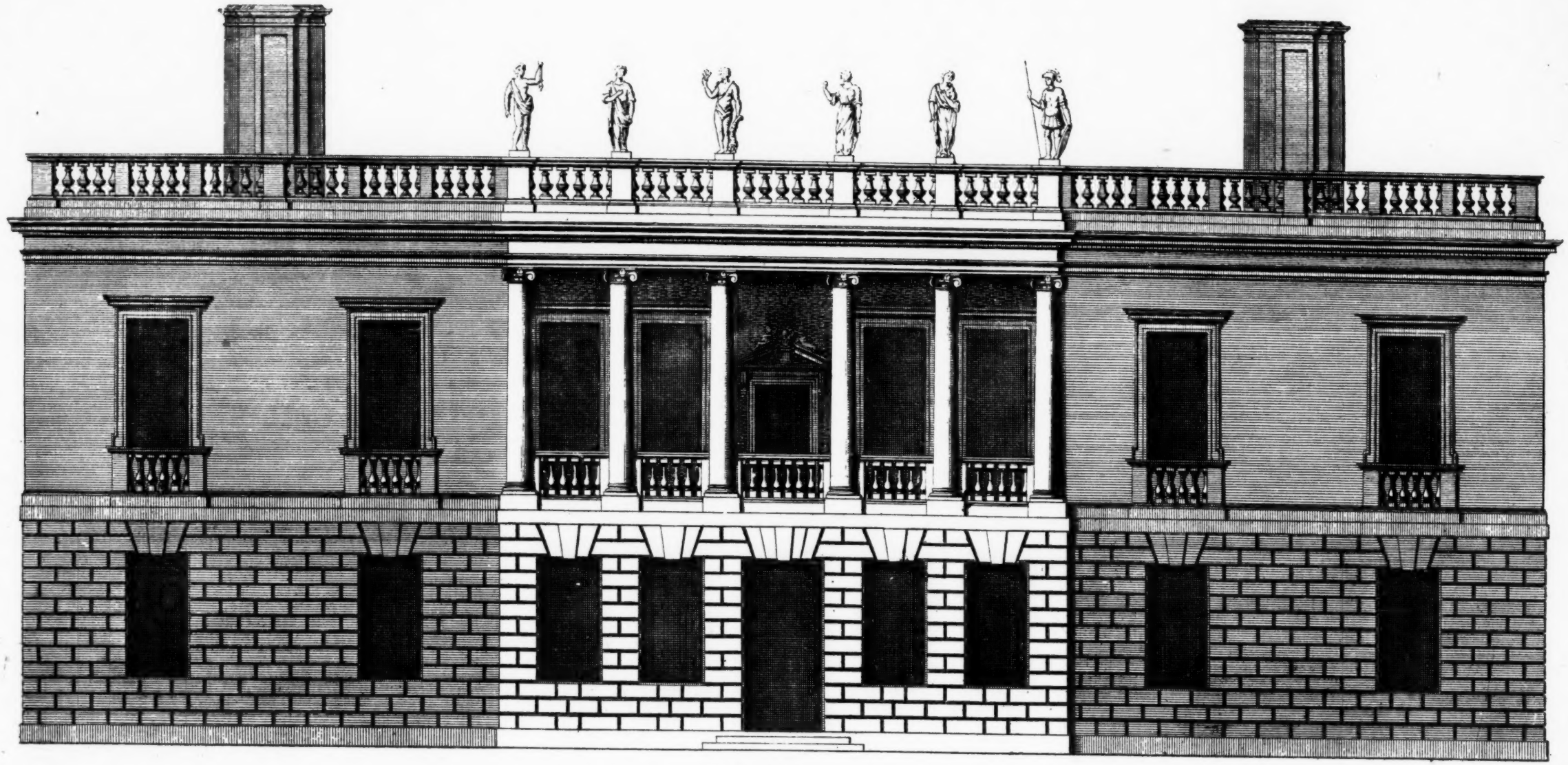
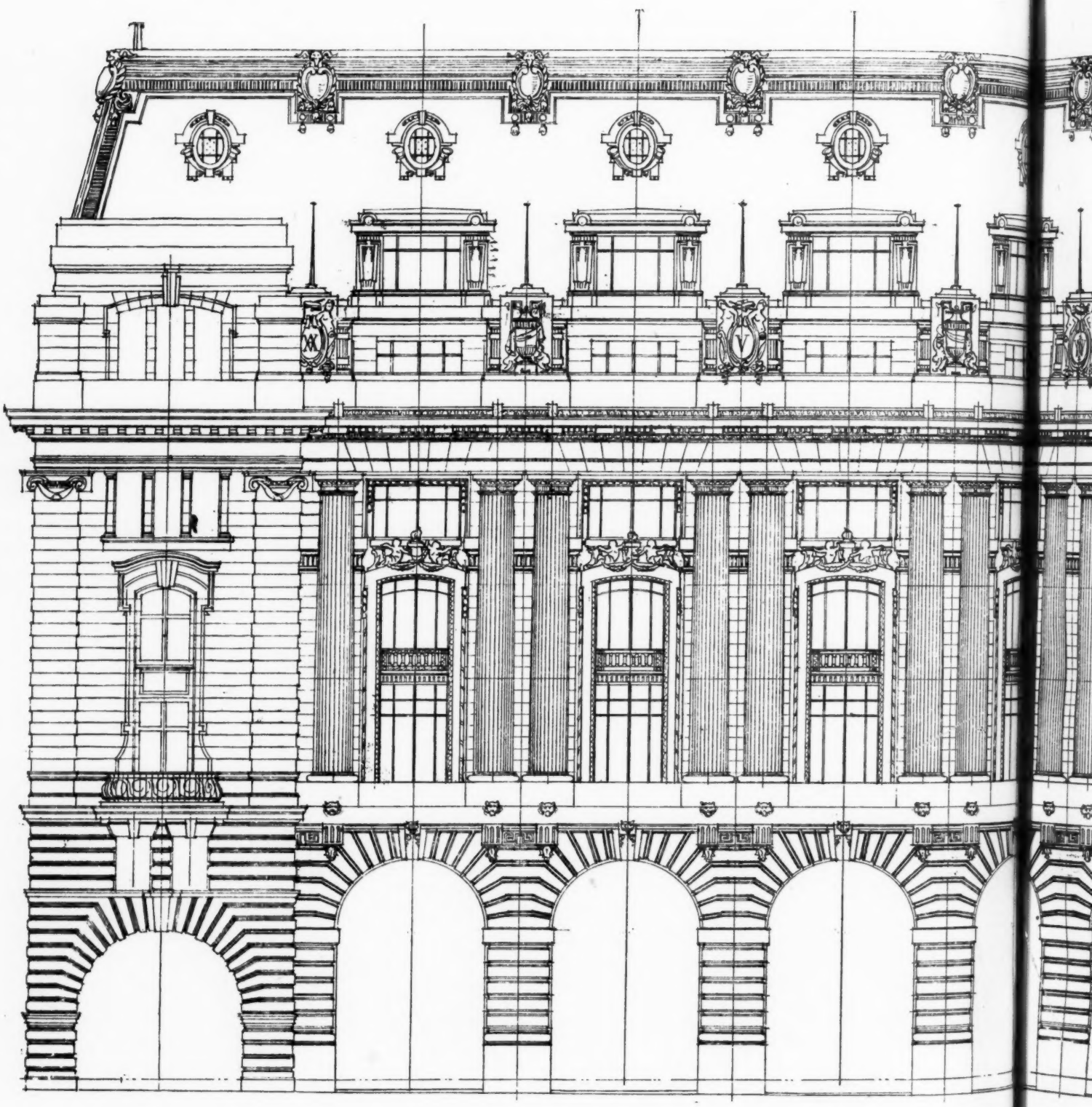


ELEVATION OF QUEEN'S HOUSE, GREENWICH.

ELEVATION OF QUEEN'S HOUSE, GREENWICH.

ST. PHILLIP'S CHURCH, BIRMINGHAM.



ELEVATION O S

10 5 0 10 20 30 40 50

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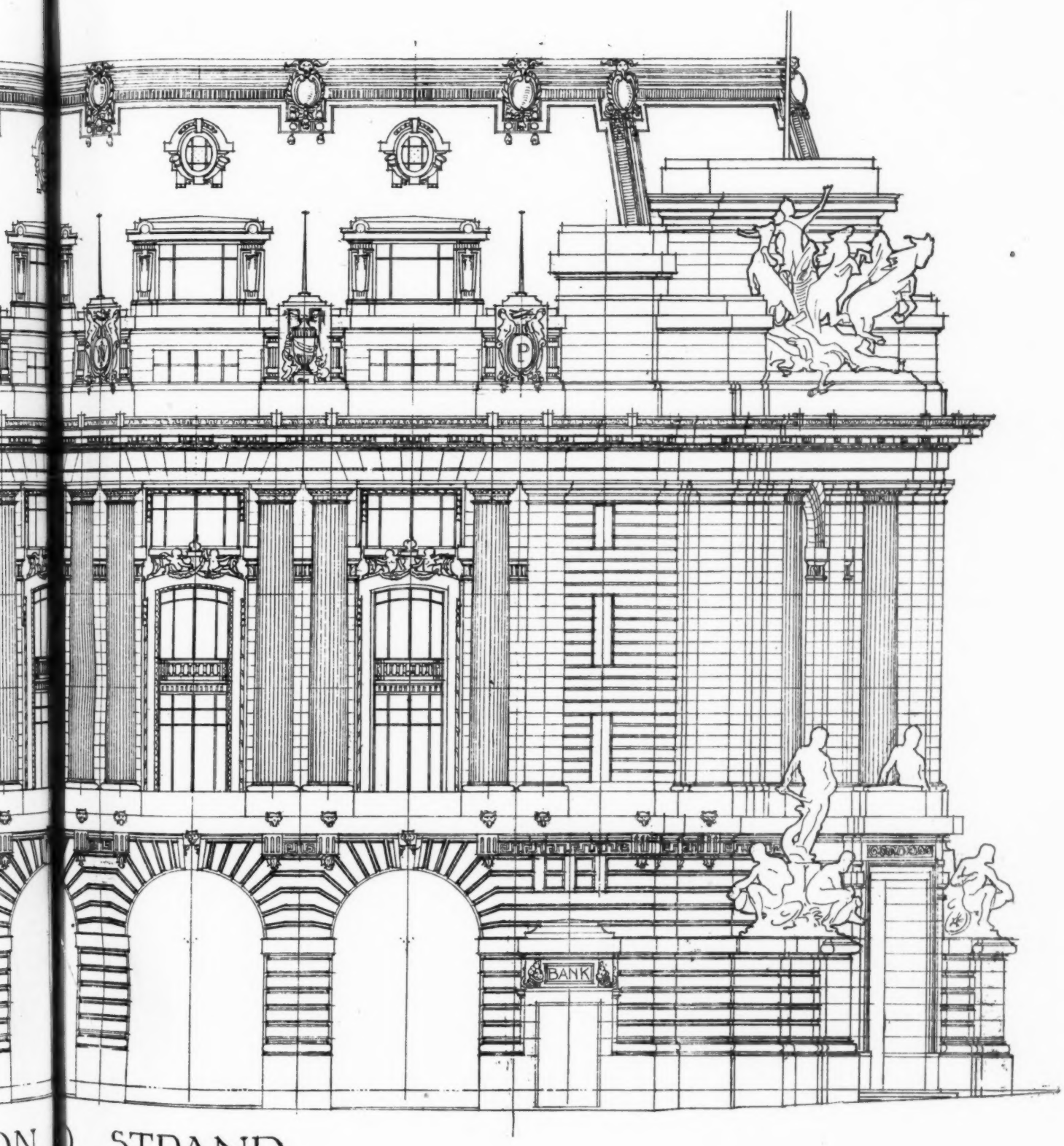
AUSTRALIA HOUSE, STRAND AND ALDWYCH, LONDON.—Mr. A. Marshall E, LL.D., A



ON STRAND

50 60 70 80 90 FEET

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